



# THE JOURNAL

OF THE

## Department of Agriculture

### OF SOUTH AUSTRALIA.

No. 10.

MAY, 1921.

VOL. XXIV.

*Published Monthly by the Department of Agriculture.*

Edited by H. J. FINNIS.

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T. PASCOE,

*Minister of Agriculture.*

## POINTS FOR PRODUCERS.

### River Murray Conference.

The Annual Conference of River Murray Branches of the Agricultural Bureau is to be held at Waikerie on May 30th and 31st and June 1st. Proceedings will commence at 8 p.m. on Monday, May 30th then sessions will be held on Tuesday, and on Wednesday delegates and visitors will have the opportunity of visiting Waikerie and Holders in the morning and Ramco and Murray View in the afternoon.

### Tomato Culture.

Tomato plants usually need an abundance of water after the dry season is well set in, says the Horticultural Instructor (Mr. Geo. Quinn). A good practice is to soak them well when planting, and if the season be dry, keep them soaked once or twice a week, until they start to make strength and blossom freely. Then slacken off the watering a little to check growth and induce the setting of fruit. As soon as fruits are forming, freely resume the free watering. This is best done by opening rings around the plant, or furrows between rows, but not in either case up to the stems of the plants. Fill these rings or furrows with stable manure, and, say, twice a week pour water into them freely. It is not wise to allow water to constantly flow around or between the plants. The excessive use of water around the plants, more particularly if the fruits come into contact with the ever-moistened soils, tends to foster the growth of a fungus which is responsible for the presence of black patches of decayed tissue, forming at the flower or pistillate end of the fruit. Tomato fruits should be kept off the soil either by tying the plants to vertical stakes or raising their recumbent branches on to horizontal laddering or wire-netting stretched flat upon stakes projecting a foot or more above the soil.

### Rabbits as Manure.

Rabbits, if buried in moderate numbers in the soil adjoining fruit trees, will enrich the soil considerably, says the Horticultural Instructor (Mr. Geo. Quinn), in reply to an inquiry. As their carcasses decay they will yield up appreciable quantities of the essential plant foods; of these, nitrogen from the albuminous parts, flesh cartilage, etc., and phosphate of lime from the bones, will be most noticeable. The carcasses should be buried around under the "dripline" of the boughs of fair-sized trees, and covered not less than 9in. to a foot with soil. Young trees should not have the rabbits buried within about 2ft. of their stems. As to whether the burning of bones destroys their value as a manure, Mr. Quinn says that if the bones are reduced to a char by burning, most of the nitrogen will be driven off in the process. A good way to soften bones to enable them to be broken down to powder

is to place them in layers in a receptacle, such as an old shallow tank, and cover them with freshly burnt ashes, then wet the ashes well with a sprinkling rose or hose. This should be done under cover, because whilst constant moisture is necessary, leaching by means of rain is undesirable. The bones should be roughly broken with a hammer before being stratified in this manner. By gradually adding layer upon layer from time to time, the receptacle will become filled with a very valuable fertiliser.

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#### **Oats for Dairy Cattle.**

In feeding oats to dairy cattle it is always advisable to feed them in a crushed or well-bruised state, otherwise a certain proportion of the digestible nutrient is lost, says the Dairy Expert (Mr. P. H. Suter). Oats are a capital concentrate food for feeding young and matured dairy stock, 1lb. of linseed meal added to 12lbs. of oats, fed to dairy cows at the rate of 1lb. for every 3lbs. of milk yielded, will greatly assist not alone in maintaining the yield, but in stimulating a more vigorous milk flow.

#### **IMPORTS AND EXPORTS OF FRESH FRUITS, PLANTS, ETC.**

During the month of March, 1921, 4,993bush. of bananas, 652bush. of fresh fruits, 7,707 bags of potatoes, 18 packages of bulbs, 30 packages of seeds, 4 packages of plants, and 1,030 empty wine casks were examined and admitted at Adelaide and Port Adelaide under the Vine, Fruit, and Vegetable Protection Acts, 1885 and 1910. Of these, 21bush. of bananas (overripe) were destroyed. Under the Federal Commerce Act, 11,386bush. of fresh fruits and 2,234 packages of dried fruit were exported to oversea markets. These were consigned as follows:—For London—10,823bush. of apples, 533bush. of pears, 2,212 packages of dried fruit. For New Zealand—22 packages of dried fruit and 30bush. of grapes. Under the Federal Quarantine Act, 2,422 packages of seeds, &c., were examined and admitted from oversea sources.

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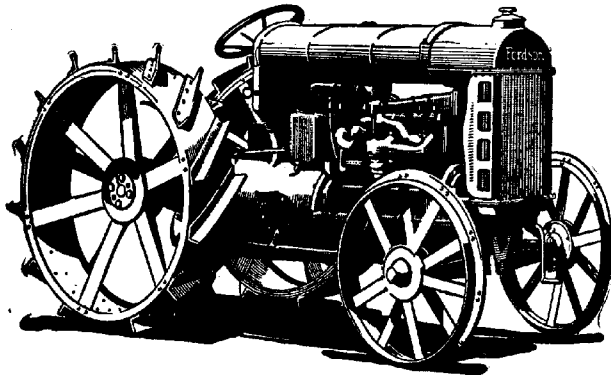
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## INQUIRY DEPARTMENT.

Any questions relating to methods of agriculture, horticulture, viticulture, dairying, &c., diseases of stock and poultry, insect and fungoid pests, the export of produce, and similar subjects, will be referred to the Government experts, and replies will be published in these pages for the benefit of producers generally. The name and address of the inquirer must accompany each question. Inquiries received from the question-boxes established by Branches of the Agricultural Bureau will be similarly dealt with. All correspondence should be addressed to "The Editor, *The Journal of Agriculture*, Adelaide."

[Replies supplied by C. A. LOXTON, B.V.Sc., Government Veterinary Surgeon.]

"C. G.," Booborowie, reports cow few weeks after calving went lame in off hind leg. This passed off, and the front off leg became swollen at the fetlock. Appetite fair; froths at mouth, and is nearly always lying down.

Reply—Give her a course of tonic treatment—one flat teaspoonful of powdered *nox vomica* mixed with a little treacle, and given on the tongue once a day for a fortnight. This should improve her appetite. She requires careful feeding. As soon as she begins to feed, put her on salt and bone meal. Give this in a little feed—about an ounce of each twice daily. You were well advised to dry her off.

"T. H.," Bordertown, has six-year-old gelding unable to place leg on the ground, very swollen below the elbow; the swelling is very tender, no sign of broken skin.

Reply—He has probably had a kick in that region, and the injury is involving the elbow joint. I do not think it is advisable to continue with fomenta and stimulating liniments at this juncture. Long-continued rest is necessary. I would not advise anything further if there are no developments. Keep him under close observation in case of subsequent abscess formation. Persistent lameness is a common sequel to injuries in the neighborhood of joints. The wasting of the shoulder muscles is consequent on disease of the limb.

"J. F. D.," Strathalbyn, reports:—(1) Heifer in calf and in good condition, animal nearly always walks around in a small circle; and (2) cow calved six months ago, near front quarter is now blind, affected teat does not appear to be sore when touched.

Reply—(1) The movements in a small circle described are probably due to pressure on the brain. As she has been affected for some time, and is in good condition, you would be wise to sell her to the butcher. (2) It appears that there is some fluid in the quarter, and if it can be removed by the teat you should do so. If, however, the duct of the teat is quite blind, and there is no heat or pain, you should not interfere at present, but keep it under observation.

"J. J. G.," Spalding, has aged mare with lump under the jaw, discharging pus.

Reply—You should enlarge the external opening to explore the wound; open it up sufficiently to provide free drainage. Dress daily with disinfectant solution—carbolic acid one teaspoonful to a pint of any other suitable antiseptic. You will find a household enema syringe the best means of dressing the wound.

"F. M. F.," Pinery, reports pig stiff in hindquarters; at times pig is unable to stand. Animal's growth has not been affected, and it still eats well.

Reply—Weakness of the hindquarters is a condition frequently met with. In this case it is probably due to an injury, and if no improvement is taking place you should consider the advisability of slaughter. If, in spite of the inability, the general health is good, as shown by appetite and general conditions, the meat is fit for use.

"H. J. C.," O'Halloran Hill, asks cause and treatment for barrenness in sows.

Reply—The commonest causes are overfatness, especially in pure bred animals. The opposite condition to this is also a cause, and sows in low condition, debilitated, or run down, frequently fail to breed. These are matters of management, and can be remedied, but it sometimes happens that the trouble is due to defective or diseased genital organs, such as lack of development of the ovary, or cystic formation in this organ. These latter might apply to the young sow which, though she comes in season, has never bred. I do not think you will get any good out of medicinal treatment. You might keep in mind the fact that the boar is often responsible. In the male the principal causes to be considered are lack of or too frequent sexual intercourse. Age and condition are also important factors.

"H. A. L.," Devlin's Pond, asks suitable ration for medium draught horses.

Reply—They require a bulk ration of about 35lbs. daily. Twelve pounds of oats is quite sufficient, the balance made up with cocky chaff and wheaten hay. It would be advantageous to include 3lbs. or 4lbs. of bran in the daily ration.

"E. M.," Meribah, has horse with an old injury on the chest from barbed wire. Mare is constantly rubbing the wound.

Reply—She apparently has a granulation tissue (proud flesh) tumor. Try daily dressing with disinfectant lotion, such as 1 : 40 carbolic acid, izarl, or kerol (one tablespoonful to a pint), and subsequent application of dry powder. First cleanse the part with warm water and soap, then apply disinfectant lotion, and afterwards powder liberally with oxide of zinc. If it does not respond to this treatment the mass should be excised, and afterwards dressed as above described.

"E. C. O.," Penong, has young cow with lump under jaw, discharging fluid.

Reply—This is probably a grass seed abscess, due to the penetration of grass seed from the mouth. If it continues to discharge you should open it up thoroughly with a clean, sharp knife, and afterwards dress every day or two with antiseptic lotion. When the discharge has ceased there will be a certain amount of fibrous thickening in the region which will take some time to become absorbed, or some of which may remain permanently.

"F. M.," Lone Gum, reports six-year-old gelding fed on good lucerne hay, but remains in poor condition. Animal persistently rubs top of neck.

Reply—The possible causes are defective teeth, worms, or absence of suitable ration. A horse at his age should not have any trouble from unequal wear of the teeth, but there are other conditions which may interfere with mastication. If however, he feeds normally, and on examination of the dung shows that it is well chewed, I think you may exclude teeth as the cause. Worms are very common in horses in this State, and their ill effects depend largely upon the degree of infestation. Fowler's solution, although largely used, is not altogether effective. Try the following drench:—Turpentine, 1½ozs.; raw linseed oil, 1½ pints. Mash him the day before administering the drench, which should be given first thing in the morning on an empty stomach. Examine the evacuations for the presence of worms, and note their appearance in case of necessity for further treatment in this connection. Allow him 3lbs. or 4lbs. of crushed oats daily. The irritation at the top of the neck is probably parasitic. Try the following dressing:—Sulphur, 1 part; lard, 4 parts (mix). Apply this at intervals of a week, rubbing in thoroughly for about five minutes.

"F. W. A.," Terre, West Coast, reports three horses affected with stiffness in legs.

Reply—This may be a rheumatic affection, many cases of which have previously been reported from the West Coast, or it may be a mild form of laminitis (founder). Treatment:—Light laxative food mashes, &c., and saline medicines, such as hyposulphate of soda, ½oz.; or Epsom salts, 1oz., and saltpetre, 1 teaspoonful, daily in the drinking water for a few days.

"L. A.," Port Lincoln, reports pigs, two months old, breathe heavily, and poor appetite.

Reply—The heavy breathing may be due to a form of pneumonia which is peculiar to pigs. In some cases of this trouble the cough is not at all marked. You should put them in a sty by themselves, that is, keep them isolated from other pigs. Keep them dry and well bedded. The feeding is quite satisfactory. If they are isolated and well cared for the prospects of recovery are good.

## SOME NECESSARY IMPROVEMENTS IN OUR FARMING PRACTICE.

[By W. J. SPAFFORD, Superintendent of Experimental Work.]

The cry for increased production in Australia is recognised by most people as the only means we have at our disposal to meet our enormous liabilities, and a great number of people consider that the opening up of more land, and the placing of more settlers on the land, is the sum total of all that is needed to satisfy the country's requirements in this direction. This, however, is only one part of what is necessary, and it is just as essential to increase the production of land already settled as to open up new lands.

In settling "new" countries, the first agricultural work to be done is to discover what crops can be grown and what domesticated livestock can be kept; then the methods of handling such crops and livestock to make profits from them; then the improvements in methods of handling to get maximum profits; and finally, the way to get maximum returns from a given area of land, without reducing the fertility of that land.

In South Australia we have found some crops and some forms of livestock that live and thrive in the country, and we have adopted methods of handling them which are profitable, but we have only just started improving our methods towards securing maximum profits, and have hardly looked at getting maximum returns without loss of soil fertility.

In this State the principal crops that have proved profitable are the cereals, of which wheat is easily the most important, and with livestock, sheep and cattle take pride of place. The main improvements already made in methods of handling the cereal crops, which are tending towards maximum returns, are:—

1. Bare fallowing the land before cropping.
2. Manuring the crops.
3. Choice of varieties.

But as not one of these methods of improvement is generally practised in the best possible manner, a fuller knowledge of the principles underlying them will help in reaching the objective.



## 1. BARE FALLOWING THE LAND BEFORE CROPPING.

The main advantages of bare fallowing land are:—

To have a sufficiently large area of land ready at seeding time to allow of a rapid seeding of one type of crop.

To encourage the formation of nitrates, and so do away with the necessity of applying expensive nitrogenous fertilisers.

To help in the formation of an ideal seed bed.

To store moisture in the soil.

To clean the land of weeds.

Compared with most other cereal-growing countries, we have a very short seeding period for cereals, and so it is quite essential that we have the land to be sown quite ready to take the seed at the proper time. Bare fallowing does this, but unfortunately too many cereal-growers take this to be the only object of bare fallowing, and keep on ploughing up land to make it loose enough to take the seed-drill, and quite ignore the other advantages of the operation.

Bare fallow, when properly worked, *i.e.*, kept free from weeds and free from surface crusts, encourages the work of nitrogen-collecting bacteria by having a supply of moisture and air, at a depth where the temperature is kept fairly constant by the mulch of loose soil.

The success or otherwise of cereal crops depends very largely on the condition of the soil at seeding, or what is usually known as the seed-bed. An ideal seed-bed for cereals is land ploughed up, then worked down so that it is free from weeds, and only the immediate surface left loose, with the underlayers well compacted together. Good fallow tends towards such a seed-bed, by being ploughed early, the heavy rains that follow compact the underlayers, and the cultivations given remove weeds and keep only the surface loose.

The rain that enters the soil remains in the soil as a continuous film surrounding all the soil particles, and whilst this film extends to the surface of the land, evaporation is constantly taking place at the surface, and the moisture rises from the depth to which it percolated, to make good the loss. Now, if the continuity of this film of moisture is broken, as by cultivation or the addition of a mulch, not much moisture rises above the break, and so it is stored in the soil.

The land being loosened by ploughing seven or eight months before seeding, gives every opportunity to destroy any weeds that may germinate, and, in fact, the loosening of the soil encourages weed seeds to germinate, which would otherwise lay dormant until the crops were sown.

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64, ELIZABETH ST., MELBOURNE.

At Turretfield Experimental Farm, for the period 1916 to 1918 (three years) a plot not fallowed averaged 8bush. 29lbs. per acre, whilst the best fallowed plot averaged 19bush. 59lbs. For the same period, a plot ploughed in September, although heavily rolled the same day as ploughed, only returned 13bush. 4lbs. per acre, as against the 19bush. 59lbs. per acre from the plot ploughed in July.

## 2. MANURING THE CROPS.

In all farmed countries, even with the richest of soils, the day arrives when fertilisers have to be applied to crops to get anywhere near to maximum yields. For instance, in England the usual dressing of fertilisers to the cereal crops (wheat, oats, and barley) is 1cwt. to 1½cwts. nitrate of soda and 2cwts. to 3cwts. superphosphate to the acre. Here, practically the only fertiliser used for the cereals is superphosphate, and the average dressing in South Australia is only 80lbs. per acre. Much improvement is still necessary in this branch of cereal-growing, and before very high yields are secured the amount of phosphoric acid supplied to the crops must be considerably increased with the addition of some nitrogen in many cases.

## 3. CHOICE OF VARIETIES.

The need of suitable varieties for each set of conditions is more or less realised, but very little is done by most cultivators towards discovering what are the most suitable ones. In the not far distant past, when red rust was playing such havoc with the then popular varieties of wheat, the need of improved varieties was keenly felt, and much effort was then made to right things; but now that more or less rust-resistant and rust-escaping varieties are the rule, many growers have become very apathetic on the question of varieties. A very great number of growers fancy any variety that they hear of as producing a big yield, and discard others that fail them in one particular year. This is quite wrong, and the choice of the main variety for any farm or for any district should rest wholly on its performance for a long period of years, and, of course, can only be decided if proper yield-records of all varieties grown are kept. For instance, at Roseworthy Agricultural College, for the 10 years (1909 to 1918) Federation has averaged 20bush. 37lbs., as against a farm average for the period of 17bush. 28lbs., but this variety in 1915 only yielded 8bush. 13lbs. when the farm average was 21bush. 13lbs. Yandilla King has only averaged 16bush. 23lbs. per acre (over 4bush. below Federation), still in 1916 this wheat averaged 34bush. 28lbs. when the farm average was 24bush. 44lbs.; Late Gluyas averaged 17bush. 34lbs. (3bush. below Federation), yet in 1909 averaged

33bush. 8lbs.; as against a farm average of 25bush. 5lbs. per acre. These few instances clearly show the need of not deciding on varieties on one season's performance, as is much too often the case at present.

#### MAXIMUM RETURNS WITHOUT LOSS OF SOIL FERTILITY.

The growing of crops alone, particularly if the best methods are employed, and high returns secured, quickly leads to the lowering of the soil fertility, and so it is recognised that, under ordinary circumstances, it is impossible on a farm to grow crops alone, and at the same time keep up soil fertility. It has been the experience of all long-farmed countries that the only way to do this is by the carrying of a lot of livestock in conjunction with crop growing, and the utilising to its full the droppings from the livestock kept. It is natural to think that the experience common to other farming countries will be our experience also, and it is easy to see it coming, because (1) it is only the low price of land that makes bare fallowing possible, and as land values rise, so must bare fallowing be reduced, (2) the using up of the soil organic matter—the substance on which we depend for our soil nitrates and in many cases for our soil texture—will force us out of growing only crops that are carted off the farms, (3) the continual withdrawal of plant food from the soil, while we are only replacing part of the phosphoric acid and none of the other plant foods is driving us towards a change.

Now, the only way that much livestock can be properly kept on a farm, without interfering with the total produce of the farm, is by the institution of a regular rotation of crops. This discovery of the best system of crop rotation for any particular set of conditions, and its carrying out by farmers, has been one of the greatest aids to successful agriculture in all of the older countries, and it will be so here, and it is towards this that we are tending. And the sooner we reach such a type of farming, rather than the crop-growing-only type, as at present, so much the better for our country.

The main reasons why a correct rotation of crops is advantageous to soil fertility, total crop production, and livestock returns, are somewhat as follows:—

1. It is more economical of plant foods, because, although most plants need the same foods, they take them in different proportions; this allows the agents acting on the soil particles a longer time to make available to plants the various minerals necessary to plants. Further, the different types of plants have different root systems, and get food from different layers of the soil.

2. Many crops do not follow their own kind well; first, because of their roots always working in the same layers of the soil; and second, because their roots give off substances toxic to themselves.

3. It checks damage by and spread of diseases, because most insect and fungus pests only affect the one type of plant, and the moving of the crops from field to field takes them away from the source of infection.

4. It is more economical of manures.

5. It provides a variety of fodders for livestock.

6. It changes the position of livestock on the farm, and so their droppings are more or less evenly distributed over the whole holding.

7. Some crops are good preparation for others, as, for instance, are leguminous crops by storing nitrogen, for cereals, and as are fed-off fodder crops for hay crops.

8. Where bare fallow is not practised, it cleans the land.

9. Allows of better distribution of farm labor.

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## ROSEWORTHY AGRICULTURAL COLLEGE HARVEST REPORT, 1920-1921.

[By W. J. COLEBATCH, B.Sc., M.R.C.V.S., Principal of Roseworthy  
Agricultural College.]

*(Continued from page 684.)*

### BARLEY CROPS.

Next to wheat, barley is the chief cereal raised at the College, and it holds this position by reason of the fact that it can be grown successfully on stubble land in years of average rainfall.

We have been growing barley in a bare fallow, wheat, barley rotation for the last 17 years, and in our experience the heaviest grain yields have been obtained in seasons in which the useful rainfall exceeded the average by 2in. to 4in. In years of excessive rainfall the stimulus to the plant appears to force it into luxurious growth of stem and leaf at the expense of the grain, and, furthermore, under such circumstances serious losses are frequently sustained through the "lodging" of the crop before the ears have ripened. In drier seasons, on the other hand, the crops are shorter and less bulky, and the proportion of grain to straw is considerably higher. Such crops are easier to handle, suffer less damage from weather, yield better-quality grain, and admit of harvesting with proportionately less loss than those carrying a greater amount of flag.

Whilst this has been our general experience, however, it has happened that other disturbing factors have resulted in a diminution of yield when rainfall conditions were distinctly favorable, and, unfortunately, this is what occurred in 1920.

The barley crops were sown immediately prior to the first seeding rain in May, and throughout the growing period they made splendid progress, outrivalling all competitors, and giving cause for the expectation of a record barley average. This was not to be, however, for early in November we had the mortification of seeing the devastating action of a violent wind storm on a ripening barley crop. A large proportion of the heads were stripped of grain, and the whole crop was so knocked about and tangled up that further heavy losses ensued in the process of harvesting. It is interesting to observe that the extent of the damage, as revealed by the tabulated yields, was greatest

in the early ripening varieties, and least in those that were less advanced when the storm broke over the field.

As previously mentioned, the barley yields were also affected to some extent through the crop being left in the stook till the wheat harvest was completed. In good years, however, some section of the cropped area must inevitably be sacrificed more or less, and for economic reasons preference last year was given to the wheat fields.

The bulk of the College barley area is devoted to varieties of "Cape barley" (*Hordeum tetrastichum*), but of late years some attention has been given to Prior malting barley, the object in view being to provide a means whereby our barley growers might secure clean, pure graded seed of a hand selected strain. A block of 7 acres was grown last year, the produce being disposed of for seed, and in the coming year approximately 20 acres will be seeded with this variety.

TABLE XVI.—*Summary of Barley Harvest, 1920.*

Field.	Area Acres.	Total Yield. Bush. lbs.	Acre Yield. Bush. lbs.
Daly's B and C . . . .	94.378	2,075 45	22 0
Experimental plots . . .	10.632	191 24	18 0
Totals . . . . .	105.010	2,267 19	21 30

TABLE XVII.—*Showing General Average Barley Yields on the College Farm, 1904-1920.*

Season.	Rainfall.		Area. Acres.	Average Yield per Acre. Bush. lbs.
	"Useful." Inches.	Total. Inches.		
1904 . . . . .	11.60	14.70	27.86	38 33
1905 . . . . .	14.23	16.71	65.73	25 4
1906 . . . . .	16.31	19.73	51.00	40 38
1907 . . . . .	13.96	15.13	79.30	31 21
1908 . . . . .	15.52	17.75	94.83	43 49
1909 . . . . .	21.15	24.05	75.27	35 0
1910 . . . . .	16.79	23.87	113.42	37 9
1911 . . . . .	9.45	13.68	76.09	39 31
1912 . . . . .	13.05	14.97	123.82	22 21
1913 . . . . .	10.82	15.66	91.09	12 19
1914 . . . . .	6.12	9.36	12.85	2 26
1915 . . . . .	18.33	19.76	24.44	41 40
1916 . . . . .	20.25	23.23	123.198	12 15
1917 . . . . .	17.25	21.86	126.053	40 46
1919 . . . . .	8.22	12.38	56.385	17 15
1918 . . . . .	10.53	12.01	109.660	23 5
1920 . . . . .	16.76	19.30	105.010	21 30
Mean for 17 years . . . . .				28 25

The farm crop was located in Daly's B. and C., a field of approximately 100 acres, and comprising both medium, heavy, and light sandy types of soil. The cropping history of this field is as follows:—

1912 . . .	Bare fallow.	1916 . . .	Barley.
1913 . . .	Wheat.	1917 . . .	Pasture.
1914 . . .	Bare fallow.	1918 . . .	Bare fallow.
1915 . . .	Wheat and barley.	1919 . . .	Wheat.

After being ploughed up at the end of April, the land was cultivated to a tilth, and drilled between May 11th and 13th with 2cwts. of 36/38 grade superphosphate per acre, together with 50lbs. of barley. The varieties sown and the yields obtained from them are appended:—

TABLE XVIII.—*Barley Yields in Daly's B. and C., 1920.*

Variety.	Selection.	Area. Acres.	Total Yield. Bush. lbs.		Acre Yield. Bush. lbs.	
<i>Hordeum distichum</i> —						
Prior . . . . .	1	7.221	174	45	24	11
<i>Hordeum tetrastichum</i> —						
Tunis 4B . . . . .	1	6.280	170	27	27	8
Tunis 6 . . . . .	1	5.425	126	35	23	18
Shorthead . . . . .	13	38.939	892	24	22	46
Roseworthy Oregon . . . . .	12	31.072	519	27	16	36
<i>Hordeum hexastichum</i> —						
Tunis 4 . . . . .	1	5.441	191	37	35	12
Totals . . . . .		94.378	2,075	45	22	0

### THE OAT HARVEST.

Generally speaking, oats are not grown largely for grain in the drier areas of the State, and it has not been the practice to sow more than 30 or 40 acres per annum with this crop on the College holding. In the early history of the farm, repeated efforts were made to find a variety that would adapt itself to Roseworthy conditions, but even the hardy Algerian type proved unsuitable for regular cultivation, either as a hay or grain crop. Gradually, however, owing to the enrichment of the soil with fertilisers and crop residues, and the introduction of improved methods of tillage, oats began to give more encouraging returns, and the practice of growing a proportion of oaten hay became established throughout the wheat-growing areas.

The cultivation of oats for grain, however, was left to the cooler and moister districts, and even to-day these furnish most of the seed required by the drier areas for green feed and hay. Whilst there are sound economic reasons for continuing this policy, it would be a distinct advantage if home-grown seed could be raised from dependable varieties, and it is not unreasonable to expect that ultimately varieties adapted to withstand high temperatures, and capable of developing



well-filled grain in a manner corresponding to that of our early types of wheat will be evolved. By breeding and selection early strains that will meet the demands of the haygrower, it will be possible to ensure more even returns, and to eliminate in a large measure the risk of failure in years of comparatively light rainfall. With acclimatised varieties there would also be less danger of the crop being checked by unfavorable growing conditions, and in consequence of their earlier maturity such crops would not be exposed to the weather for so long a period as those raised from southern seed.

In addition to this question of hay growing, there has arisen in later years a demand for varieties of oats that will furnish a wealth of green feed for fattening lambs, as well as for providing succulent fodder for dairy cattle and horse stock. In the moister districts oats are sown mainly for spring grazing, but in the wheat areas green grazing is needed even more in the autumn and early winter, and none of the older varieties are rapid enough in the initial stages of growth to develop into a grazing crop before the winter sets in.

Algerian oats, which are more widely grown than any other variety, make very slow progress at first, and cannot be recommended for early winter feed. Cape oats are certainly better in this respect, but they are very weak in the stem, and if allowed to stand for hay they almost invariably go down, and cause vexatious delays at harvest. This is a serious objection, for it is always likely that oats sown for green feed may ultimately be wanted for a hay crop, and hence, in selecting a suitable type, the dual requirement must be borne in mind.

It follows from this that the coarse, rank growing oats that do so well in humid countries are quite unsuited to our purpose, and we are therefore restricted in our choice to the fine-stemmed, early maturing kinds, most of which belong to or have been derived from the Algerian group. During the last three or four years special attention has been given to this subject here and in New South Wales, and a large collection of promising varieties has been brought under trial. In this report are included the grain yields of these oats, but it should be emphasised that, whereas these figures serve to indicate the extent to which each variety is able to prosper under our conditions, the basis of selection is not grain yield, but prolific early growth and quick ripening habit. Parcels of seed of many of these varieties have been distributed, and I anticipate that when their improved qualities are realised they will steadily replace the Algerian oat in many parts with distinct benefit to the stock-raising industry, and without any reduction in the quantity or quality of oaten hay.

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TABLE XIX.—Showing Grain Yields of Varieties of Oats.

Variety.	1918.	1919.	1920.	Average
	Bush. lbs.	Bush. lbs.	Bush. lbs.	Yield. Bush. lbs.
Lachlan . . . . .	—	42 29	57 6	49 38
Scotch Grey. . . . .	49 17	31 12	55 15	45 15
Early Burt . . . . .	—	48 3	36 27	42 15
Cowra 22 . . . . .	—	—	36 4	36 4
Guyra. . . . .	—	16 1	55 29	35 35
Kherson . . . . .	29 29	22 19	55 9	35 32
Buakura . . . . .	21 3	36 24	46 12	34 26
Bathurst Early. . . . .	—	37 16	31 7	34 12
Kelsall's . . . . .	17 28	33 3	49 2	33 11
Stark's . . . . .	41 26	21 3	32 9	31 26
Smyrna . . . . .	19 9	26 1	49 13	31 21
Glen Innes No. 1 . . . . .	—	—	30 22	30 22
Sunrise . . . . .	25 33	15 27	46 4	29 8
Bathurst 5 . . . . .	—	21 15	34 21	27 38
Bathurst 4 . . . . .	—	21 15	33 27	27 21
Cowra 25 . . . . .	—	—	20 0	20 0

For the information of those who are interested in this subject I append a few descriptive notes of the above-mentioned varieties:

#### OATS BELONGING TO THE ALGERIAN GROUP (*Avena sterilis*).

**Lachlan.**—Originated from a cross between a white-grained French oat—White Ligowo—and Algerian, made by Mr. J. T. Pridham. It was one of several types selected from this cross, and in New South Wales it is recommended as an improvement on Algerian oats in the warmer districts. It is a vigorous grower, producing abundance of early feed and straw. The straw is stronger than that of Algerian, and the crop resists rough weather better, which is an advantage in hay-growing districts. The grain resembles a well-grown sample of Algerian oats, but is lighter in color and stouter. In our experience it is a prolific yielder.

**Early Burt.**—This variety was introduced from America, where it is said to have shown strong powers of resistance to smut-producing fungi. It is an early type of Algerian oat, which makes very quick, early growth, and in order of ripening it ranks amongst the earliest varieties grown. The straw is fairly strong, but it is not so good in this respect as Lachlan. In short growing seasons it would probably do better relatively than Lachlan, but the latter is a more attractive type, and under normal conditions is to be preferred both for hay and grain. The grain of Early Burt is longer, narrower, and distinctly lighter in color.

*Cowra 22.*—This is another of the White Ligowo and Algerian crossbreds, which was tested for the first time at the College last year. It produces bulky, early growth of a dark-green color, and ripens its grain much quicker than the Algerian variety. It grows to a medium height, appears to stand up well, and yields a light brown grain of medium size.

*Guyra.*—Selected from the produce of the White Ligowo and Algerian cross. It resembles Algerian oats in color of straw and grain, but grows faster and ripens off a few days earlier. The straw is fine, and makes good-quality hay.

*Ruakura.*—A selection made by Mr. Green at the Ruakura Experimental Farm from a crop of Algerian oats. It is noted for its remarkable rust-resisting powers. The grain is dull yellow and rather narrow, and the straw is lacking in rigidity. In time of ripening it corresponds with the variety Guyra.

*Bathurst Early.*—This resulted from a cross between Algerian and Royal Cluster, and was subsequently discarded by the breeder—Mr. J. T. Pridham—as being deficient in yielding capacity. The figures obtained by us, however, warrant further trials. The first growth is remarkably quick, and the crops attains maturity two or three days later than Early Burt. The straw is stiff, and the grain is plump, broad, and of a brown color.

*Stark's Hooimaker.*—A tall growing oat, resembling Sunrise in color and general appearance. Introduced into New South Wales from the United States of America. It stools better than Sunrise, and resists high winds. The grain is large and attractive, and dark yellow in color.

*Glen Innes No. 1.*—This variety has the same origin as Guyra, which it resembles in the green stage. The grain, however, is lighter in color and not so plump.

*Sunrise.*—A very early ripening variety, said to be a natural cross-bred, of which the Algerian oat was one parent. Tall in habit, a sparse stooler, rapid grower. Early sown, it is admirably adapted for green feed, and if intended for crop it is the better for being grazed back in normal seasons. The grain is large, of a yellowish white color, and forms a first-class sample of feeding oats.

*Bathurst 5.*—Of the same parentage as Lachlan, this variety is found to yield a heavy growth of green fodder, and also produces high returns of hay and grain. The grain is of medium size, and light brown in color.

*Bathurst 4*.—This closely resembles Bathurst 5, and was derived from the same cross.

*Cowra 25*.—This was selected from a crop of Sunrise oats. It does not grow so high, but is a better stooler. The grain is not unlike that of Sunrise, but is a little darker.

#### OATS BELONGING TO THE COMMON OAT GROUP (*Avena sativa*).

*Scotch Grey*.—This is the modern form of the Old Grey or spring-sown Dun oat of Scotland. It is one of the most prolific stoolers of all cereals, and is one of the first to cover the ground and shoot into ear. In normal years it does not grow more than 2ft. 6in. to 3ft. in height, but even with a seeding of 30lbs. per acre a thick, heavy crop results. The foliage is light green, and the grain, which is short and shotty, is light to dark grey. The hay is fine stemmed, and stock are very fond of it.

*Kherson*.—Imported from the district of Kherson, in Russia, by the United States, and thence introduced into Australia. The grain is small, thin hulled, and light yellow in color. The straw stands up well, and when in ear the crop attains approximately the same height as Scotch Grey. The ripe panicles yield an abundant crop of good feed oats.

*Kelsall's*.—This was selected by Mr. Kelsall, of the Wimmera district (Victoria), and is being tried on account of its extreme earliness in ripening. Straw, fine, rather weak; grain, long, narrow, yellow.

*Smyrna*.—Obtained by New South Wales Department from the Washington Bureau of Agriculture. Straw is weak, but of fine quality. Grain very similar in character to Kelsall's. Early ripening.

#### GRAINGER'S B.

With the exception of those sown in the experimental fields, the oat crops were all located in this field. Particulars of its previous history are here shown:—

1908 . . . .	Bare fallow.	1914 . . . .	Wheat, oats.
1909 . . . .	Wheat, oats.	1915 . . . .	Pasture.
1910 . . . .	Bare fallow.	1916 . . . .	Kale.
1911 . . . .	Wheat, oats.	1917 . . . .	Bare fallow.
1912 . . . .	Pasture.	1918 . . . .	Pasture.
1913 . . . .	Bare fallow.	1919 . . . .	Bare fallow.

Fallow ploughing took place in the first week of September, and the land was scarified four times between ploughing and seeding. Seed (55lbs.) and superphosphate (2cwts.) were drilled in by

April 19th, and a good germination resulted. Unfortunately, some of the plots were laid by rough weather, and consequently did not yield up to expectations, but those that stood well gave very satisfactory returns.

TABLE XX.—Yields of Oats Grown in Grainger's B, 1920.

Variety.	Selection.	Area. Acres.	Total Yield. Bush. lbs.	Acre Yield. Bush. lbs.
Kherson . . . . .	1	1.294	45 37	35 20
Stark's . . . . .	1	1.342	43 10	32 9
Buakura . . . . .	1	1.774	56 29	31 39
Smyrna . . . . .	1	1.318	38 0	28 33
Kelsall's . . . . .	1	1.270	33 36	26 28
Sunrise . . . . .	6	1.774	44 3	24 34
Sunrise . . . . .	5	9.945	239 22	24 3
Scotch Grey . . . . .	7	8.342	177 37	21 13

In justice to the Scotch Grey variety, it should be explained that it occupied an inferior block of land, and hence cannot be fairly judged by these figures. Reference to the preceding table will show that when grown under similar conditions to other varieties it gained third place with a yield of 55bush. 15lbs. per acre.

TABLE XXI.—Summary of Oat Harvest, 1920.

	Area. Acres.	Total Yield. Bush. lbs.	Acre Yield. Bush. lbs.
Grainger's B . . . . .	27.059	679 14	25 4
Experimental plots . . . . .	6.779	333 16	49 7
Totals . . . . .	33.838	1,012 30	29 37

TABLE XXII.—Showing the Average Oat Yield for the Period, 1905-1920.

Season.	Rainfall.		Area. Acres.	Yield per Acre. Bush. lbs.
	"Useful." Inches.	Total. Inches.		
1905 . . . . .	14.23	16.71	20.00	43 10
1906 . . . . .	16.31	19.73	33.50	41 18
1907 . . . . .	13.96	15.13	20.00	*—
1908 . . . . .	15.52	17.75	20.00	22 28
1909 . . . . .	21.15	24.05	23.52	43 19
1910 . . . . .	16.79	23.87	24.60	28 15
1911 . . . . .	9.45	13.68	22.82	22 8
1912 . . . . .	13.05	14.97	52.00	10 4
1913 . . . . .	10.82	15.66	3.33	11 36
1914 . . . . .	6.12	9.36	—	*—
1915 . . . . .	18.33	19.76	1.10	32 32
1916 . . . . .	20.25	23.23	6.36	27 15
1917 . . . . .	17.25	21.86	20.88	14 25
1918 . . . . .	10.53	12.01	35.99	31 4
1919 . . . . .	8.22	12.38	36.51	10 17
1920 . . . . .	16.76	19.30	33.838	29 37

Mean for 14 years (omitting 1907 and 1914) . . . . . 26 16

\* Complete failure.

### RYE CROPS.

Last season's rye crops were slightly above the average in grain yield, and the production of straw was exceedingly heavy. A new variety—Black Winter—was included, and yielded 17bush. lib. per acre. This rye was chosen from the hand plots because of its capacity to grow vigorously in the autumn.

TABLE XXIII.—*Showing Yields per Acre of Rye, 1909-1920.*

Season.	March Rye. Bush. lbs.	Multicaule Rye. Bush. lbs.	Giant Winter Rye. Bush. lbs.	Schlanstedt Rye. Bush. lbs.	Means. Bush. lbs.
1909 . . . .	7 46	8 44	11 34	4 3	8 15
1910 . . . .	16 4	12 40	12 36	15 40	14 9
1911 . . . .	20 9	11 24	9 45	9 48	12 43
1912 . . . .	15 6	11 22	11 4	10 13	12 0
1913 . . . .	11 49	11 42	12 0	7 0	10 36
1914 . . . .	3 20	3 11	0 47	0 51	2 0
1915 . . . .	22 41	23 47	23 24	27 31	23 35
1916 . . . .	6 30	9 18	6 31	7 19	7 52
1917 . . . .	9 27	13 39	10 16	7 50	10 39
1918 . . . .	12 38	11 13	12 6	12 17	12 3
1919 . . . .	12 35	13 30	16 2	13 22	14 7
1920 . . . .	13 43	12 30	14 25	15 51	14 10
Means for 12 years	12 38	11 53	11 41	10 55	11 49

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## MILK VITAMINES IN DIET DEFICIENCY DISEASES OF LIVESTOCK.

[A Paper by FRAS. EVELYN PLACE, B.Sc., Lecturer, Agricultural College, Roseworthy, South Australia, read before the Australasian Association for the Advancement of Science.]

### ABSTRACT.

Diet deficiency diseases are caused by lack of vitamins.—View supported by seven years' observations.—Sir A. Theiler's six links in the aetiology of lamziekte.—The last three directly connected with lack of vitamins.—Theiler's observations are superior to Koch's, and offer better explanation of phenomena.—Marked decrease in diet deficiency diseases in South Australia during last 10 years.—Discussion of milk proteins and types of vitamins.—Necessity of milk diet demonstrated by stunted growth in young stock.—The quality of proteins more important than quantity demonstrated by study of vitamins.—Experimental demonstration of value of milk vitamins.—Vitamins essential for growth, development, and reproduction.—Vitamin starvation remedied by milk.—Milk restores the protein balance.—Economy of milk diet shown by rapid growth.—Butter fat necessary for health.—Three types of vitamins in milk.—Effect of heat on vitamins.—Milk vitamins stimulate hormones.—Degree of toxicity of proteins.—Controlled by fat soluble vitamins.—Effects of toxins on cows.—Necessity for careful *post-mortem* examination.—Effects of lack of vitamins on endocrine secretion.—Resultant bacterial invasion.—Special effects of vitamin deficiency on adrenals, thyroid, and aeres.—Practical measures to combat conditions by use of milk.

I have already had the honor of addressing the A.A.A.S. at the Melbourne meeting in 1913 on the question of diet deficiency diseases in livestock. On that occasion I drew attention to the incidence of diseases in livestock not unknown in Tasmania, the clinical symptoms of which are analogous to beri beri, scurvy, pellagra, and similar affections in man. The lack of vitamins in the class of disease in man is generally acknowledged to be a leading factor in their aetiology, and in experimental animals, insomuch that the addition of the missing vitamins not only checks the disease, but enables the animal to return to normal health.

The passage of seven years since I drew attention to lack of vitamins as an essential factor in the causation of disease in livestock has enabled me to carry out numerous observations on the effect of supplying the missing vitamins, and has in no way shaken the validity of the proposition I then made.

Progress has been made during that time, however, in investigation of the class of disease, and perhaps the most notable advance has been the work of Sir A. Theiler in South Africa, resulting in his announcement of the chain of *six links* requisite for the establishment of lamziekte, the local name in South Africa for dry bible, Midland disease, pica, or whatever name may be adopted for the train of symptoms developing in livestock on account of lack of vitamins.



It may be that I have stressed the lack of vitamins somewhat unduly in relation to the other factors, but no chain is stronger than its weakest link, and the last three links of his chain are all directly concerned with lack of vitamins, as will be seen if we take the six links separately:—1. The toxin. 2. The toxin producing saprophytes. 3. The carcass parts that contain the toxin. None of these three would matter if it were not for one or other of the next three. 4. Pica, or depraved appetite (induced through lack of vitamins). 5. Vegetables, soils, and climate. (The first two directly involved in lack of vitamins, and the third often responsible for it.) 6. Susceptibility, chiefly induced by lack of vitamins.

Undoubtedly Sir Arnold's chain is the fullest explanation of the phenomena of diet deficiency disease as yet produced, and is highly valuable in its exposition of the inter-relationship of numerous factors in the production of disease, a condition that for many years has been overshadowed by Koch's postulates, and the somewhat over-eager reverence paid by bacteriologists to a master whose personal predilections were for the concentration of an immersion lens rather than for the broad area of the field experiment. I freely admit the latter offers scope for too general deductions which may be shattered by the concentration of the microscope, but from the stockowner's point of view, the man who can offer suggestions resulting in living animals is of more interest than the one who decides the cause of death under minute lenses.

In South Australia some ten years ago diet deficiency diseases, vulgarly grouped as dry bloat, seemed to be threatening the cattle industry of the State, at least as far as dairy stock was concerned. To-day the incidence of the disease is looked upon as indicative of faulty management, and the purchase of food to furnish a balanced ration has replaced the purchase of drugs that usually proved inefficient remedies, with the result that the disease is met with in the herds mainly of the ignorant or lazy.

Many years ago Mr. T. H. Williams, the Chief Inspector of Stock for South Australia, pointed out to me the marked benefits derived by cattle suffering from diet deficiency diseases, from large and repeated doses of milk. This clinical observation has been borne out by myself and others in numerous cases.

Modern research throws some light on this point, and it is my present endeavor to explain the reason of the beneficial effects of milk in this class of disease, for it is a means most commonly to hand, and calculated to prevent and treat the symptoms as they become known to the stockowner.

It may be well to glance at the composition and structure of certain proteins of milk which are an indispensable part of all vital body

fluids. Such proteins have been demonstrated to be made up of eighteen different complexes, called amino acids, which in turn may be grouped into three or four types, so that the situation is much simplified; and these bodies bear to food material similar value to that borne by the vowels to an alphabet; without them the consonants remain so many unusable units, with them they form the thousands of words found in the columns of a dictionary. Without vitamins food material is like the consonants—unusable; with them it is converted into the thousands of forms required for the upkeep of the animal body, so that experimental work has demonstrated such an understanding of the influence of food on growth, that by merely changing one item of diet an animal can have its growth checked at any stage of development, and may be maintained for many months in health, but without growth.

This statement of scientific observation is borne out on numerous farms, where the stunted piglet, the poddy calf, the undersized foal, all bear eloquent testimony to the lack of some one or more important vitamins in their diet, and stand out as signals of poor stock-rearing. Experimentally, the use of milk has enabled accurate observations to be made. Practically its value is known to every stock-rearer. It is interesting in this relation to note that the heaviest incidence of this type of disease in South Australia occurs where calf management excludes milk from the diet, although the outbreak of the disease may be delayed for two or more years.

Since 1912 it has been demonstrated that the quality of the protein present in a food is more important than the quantity, and the realisation of the part vitamins play has raised many problems.

Milk contains several proteins, the two most prominent being the casein of cheese and the lactalbumin of whey, the latter being the more useful in the growth of young animals. The importance of combining milk with cereals rather than of relying on cereals alone is well illustrated by an experiment on two rats, one of which was fed on a diet in which gliadin of wheat flour provided the protein, and gained only 10 grammes in ten weeks; while the other, fed on flour and milk, gained 160 grammes in nine weeks. In this experiment the percentage of protein and nutritive ratios of the mixtures were practically identical, the foods differing only in the kind of protein, *i.e.*, available vitamins.

By digestion the proteins are broken up into the amino acids, which are then used in constructing the new proteins of the tissues of the growing animal. If the food protein furnishes a sufficient amount of these amino acids needed for the tissues required for normal growth, well and good; if it does not, the growth of the animal is retarded.

In such a case, milk supplies the important growth amino acid lysine; this, with the gliadin, supplying the necessary vitamins required for growth.

But there are other functions to be provided for beside growth. For instance, under the common faulty stock management already mentioned the growing heifer has to provide the tissue growth vitamins for a calf as well, and the practical man's method of enabling her to do this is very often to put her on a stubble, the proteins of which have been stripped in the ears or leached from the stems by sun and wind, and when under such protein starvation the dam sacrifices herself for the developing calf and her own natural functions fail, resort to doses of milk have a marvellously quick effect; she gets on her legs in a day or two and struggles along again unless her owner sees far enough to realise that he must supply food that the stubble does not. In some cases the routine practice adopted is a daily allowance of milk, generally mixed with bran or other concentrate.

Amino acids are not obtainable commercially; probably if they were they would be of limited use in farm feeding; but products containing the required proteins are available, and their intelligent use often means the change from loss to profit. For instance, if maize is fed alone, there are sufficient vitamins in it to enable an animal to grow slowly as well as keep alive, but if milk is given with it, rich in tryptophane and lysine, growth is very rapid. It is thus clear that the chemical composition of the protein of food influences growth, and it is absolutely necessary to provide animals with protein of the right sort to enable them to grow well and quickly. This applies not only to growth, but to milk and egg production. The food of animals producing them must contain large amounts of protein, and such protein must be of the right sort, and whether the mixtures now in use are yielding the best results at the lowest cost remains to be settled; as yet we do not know the actual protein requirements of milk production, but doubtless they are similar to those of growth. The South Australian cow, at any rate, indicates this when in her fourth year she collapses at her maximum milk supply, but makes a very rapid recovery when supplied with the necessary vitamins, often given as drenches of gallons of milk.

In the long run the ruling factor in this question is £ s. d., although at the back of this lies the question of sound management and intelligent feeding. An illustration will make the matter clear. Experiments were made by feeding pigs on maize, maize and dried blood, maize and skim milk. Maize alone showed a gain of 9lbs. per bushel fed; 1bush. maize with 5.5lbs. dried blood gave 13.3lbs. gain; 1bush. maize with 168lbs. skim milk or 17lbs. dry food gave 21.8lbs. gain,

i.e., 10lbs. of dry matter in milk replaced 55lbs. of maize. Converting these figures into currency, maize alone produced pork at a loss of 32s. 9d. per 100lbs. gain, whereas nine parts maize and one part dried blood produced pork at a profit of 60s. per 100lbs. gain; and one part maize with three parts skim milk gave a profit of 144s. per 100lbs. of gain. This is certainly a case where figures talk, and if the figures were multiplied by the calves and pigs of Australia they would talk very loudly. Translated into scientific language, the vitamins of milk given in the right quantity at the right time convert a loss into a huge profit.

The ravages of war in Europe have decimated the herds, and milk is a costly food. The lack of it accounts for that form of ulceration of the eye in infants known as xerophthalmia, curable by a milk diet or the use of cod liver oil. Art has succeeded in producing margarine, so like butter that both physical and chemical tests fail to differentiate the two; but the able housewife declares for inferior butter rather than superfine margarine to keep the children in health, and the wounds of men in Europe healed much quicker when butter was available in their diet than when they had margarine.

The vitamins of milk were responsible for the betterment in condition in these cases. But just what these vitamins are has not yet been made clear. At least three types occur—the fat soluble, or A vitamin; the water soluble B; and the antiscorbutic C. The last exists in milk, but to no great degree, hence probably the failure of milk to restore some of the scurvy cases in cattle. In fact, I myself developed marked scurvy when on a milk diet alone for some months in India. The antiscorbutic vitamin is found plentifully in vegetable juices. Moreover, this vitamin is sensitive to heat, so that pasteurised or boiled milk is practically deprived of it. On the other hand, the fat soluble vitamin is resistant to heat, therefore butter may be pasteurised with advantage.

The water soluble vitamin, also found in milk, is necessary for the maintenance of life, and an animal deprived of it dies in a short time. If, however, when apparently dying, this vitamin is supplied, the animal revives with surprising rapidity. The vitamin is resistant to heat. It acts as a stimulant to the appetite and growth, and is more efficient than drugs, though the latter may sometimes appear to be satisfactory, as compound syrup of phosphate of iron in Midland disease.

It is needless to speak of the sugar of milk and its mineral contents; they are well known as food adjuncts, and it only remains to say that dilution of milk lessens the dose of them as it does of the vitamins.

Dr. Hopkins in July last suggested that milk vitamins were necessary to stimulate hormones. If this be the case, it is easy to see how

doses of milk given to animals apparently in extremis have such a rapid effect.

Admitting the validity of the first three links in Theiler's chain—and it is difficult not to do so—one naturally wonders what effect they have on his sixth: susceptibility. There is little doubt that the relative amounts of the three types of vitamine have a direct bearing on this point. One notes the varying toxicity of proteins on different classes of animals.

Fats, with their fat soluble vitamine, especially in the case of butter fat, diminish the toxicity of albuminoids and augment their nutritive power. Albumin is better utilised with fat than with starch, and fats are qualitative modifiers of nutrition. Hence, when a cow is at her best with the milk pail, she is more likely to develop the symptoms arising from lack of vitamins; in other words, she will be more susceptible to attack, even if that attack is due to a toxin. And if during her youth she has been consistently denied the required amount of fat soluble vitamine, has been forced to make her growth under heavy penalties, she can scarcely avoid falling a victim.

It is a pity that in making post-mortem examinations on subjects dying of diet deficiency diseases, greater care is not bestowed on the examination of the adrenals, thymus, and thyroid bodies, macroscopic examination of large organs, leading to a verdict of dry bible, and microscopic examination of their tissue structure leading to the blind alley of invisible virus are most often the two lines of operation. Even in human pathology scarcely anything is known of the effects of vitaminic deficiency on such organs as the adrenals, the pancreas, liver spleen thyroid, and reproductive organs, while in comparative pathology the loss of the last in the male is ignored, and the condition of the former organs is never considered, though they may be looked on as the gardeners, charged with keeping of the body in fit condition for the growth of its healthy crops, while various crops of micro-organisms are weeds that flourish in a soil made ready for them by a diet deficiency. The gardeners cannot prepare their beds unless the soil constituents and stimuli are granted them. Even if they hoe out the weeds, the crops cannot grow. Vitaminic deficiency renders the body very liable to be overrun by a rank growth of bacteria, and it is probable that metabolic disturbances may determine the character of these growths.

In diet deficiency diseases of cattle and sheep there is a very constant hypertrophy of the adrenals, the meaning of which has not yet been worked out. The thyroid, on the contrary, seems to undergo a myxoid degeneration, especially in the horse, who also shows a chain of gastric

intestinal and pancreatic disorders on a diet too rich in starch and too poor in vitamins and essential constituents of food. The paralysis shown by horses under toxic and diet deficiency conditions also shows that the central nervous system atrophies little, the symptoms being due to impaired functional activities of nerve cells rather than degeneration.

#### PRACTICAL APPLICATION.

The practical application of the above observations resolves itself into the following methods.

It is most profitable to keep young stock thriving and that milk is an essential for them.

A stoppage of growth and accompanying stunting may be rectified by the addition of milk to diet.

Stinting milk during early life results in increased susceptibility to diet deficiency diseases later on.

As the fat soluble and water soluble types of vitamins are not destroyed by heat, pasteurised milk from factories is efficient.

Fat soluble vitamins removed by separating may be replaced with satisfactory effect by cod liver oil to some extent, but that vegetable oils, such as linseed, are not by any means so satisfactory.

The collapse or breakdown of diet deficiency disease may be met by large doses of milk, the action being rapid even when the animal appears to be moribund.

White eye or opacity of the cornea in calves and young sheep is a leading symptom of vitamin deficiency, and disappears after the administration of fat and water soluble vitamins, in milk to calves, in fresh pasture to sheep.

Sheep would make a more rapid recovery if it were practicable to feed a little bran, oats, and milk during the time of attack.

Many obscure forms of nervous disease in livestock would never occur if a full supply of vitamins could be maintained, and the simplest way for the stockowner to do so is to be liberal with milk during the growing period.

Milk is one of the readiest and cheapest remedies when diet deficiency symptoms occur, and is therefore to be recommended.

In cases of disease, the dosage may be large.

Fat soluble and water soluble vitamins are available in dried milk, and this substance can be used as an emergency remedy.

Bacterial invasions may to a large extent be averted if vitamins exist in required quantities and of the right quality in diet. The administration of milk, especially during the growing period, is a simple and effective way of ensuring this.

## TOBACCO : SUGGESTIONS FOR THE HANDLING OF THIS CROP IN SOUTH AUSTRALIA.

*(Continued from page 756.)*

### AIR-CURING PLUG TOBACCO.

#### HARVESTING THE CROP.

The crop should be harvested as soon as mature, and should never be allowed to become over-ripe before cutting; this latter condition is evidenced by the appearance of brown spots on the leaves, which soon spread all over the surface. A mature plant ready for harvesting is one on which the leaves droop, become roughened on the upper surfaces, and are mottled with yellowish patches, and in some varieties are gummy to the touch. All plants will not mature at the one time, and so it becomes necessary to make two or three cuttings.

#### CUTTING THE CROP.

The stems of the mature plants are split from the top to within 5in. or 6in. of the ground, with a light tomahawk, butcher's knife, or a specially-constructed heavy knife, and the plant is then bent over and cut off close to the ground. When splitting the stem, care must be taken to hold the knife at such an angle that no leaves are cut in the process.

#### WILTING THE PLANTS.

After cutting, the plants are laid on the ground and left to wilt in the sun for half an hour or so, the length of time varying with the intensity of the sun, and on no account should the plants be left so long that the leaves are scorched.

#### HANGING THE PLANTS.

After wilting, the plants are carted to the shed for drying, and for hanging in the shed are placed on sticks about 4ft. to 5ft. long, and about 1in. in diameter, by opening up the split stems and placing on the stick, so that the halves of the plant are hanging on each side, and the butt of the plant is then protruding about 6in. above the stick. The plants are spaced on the sticks so that they are about 4in. apart. These sticks of plants are hung low in the shed, and so that there is room for a current of air to pass between the plants.

#### DRYING THE PLANTS.

The tobacco plants must not be allowed to dry too quickly at first, so they remain low down in a closed shed until all of the original green color of the leaf has turned to yellow. As soon as this stage has been reached, the plants should be dried quickly, so as to fix this yellow color, and can be done by drying the plants high up near the roof of a galvanized-iron shed.

## PREPARING FOR CURING.

The proper curing of the leaf consists of a mild fermentation within the tissues of the leaves, brought about by an enzyme. This enzyme, like the one which leads to the bursting of the buds of deciduous plants, will not do its work until the spring season arrives, and so it is incorrect to try to cure the dried leaves until the spring. The plants are allowed to hang in the shed until about August, and between drying and that time must be watched to see that they do not absorb enough moisture to lead to the development of moulds.

## STRIPPING AND CLASSING.

Some time between drying and curing, the leaves should be stripped from the stems, classed, tied into hands (bundles of about a dozen leaves tied together by their stems), and then rehung in the shed to await the curing season. The plants are only taken down to strip when moist enough to be tough and pliable, otherwise they will break up when handled, and the leaves are carefully pulled off the stem of the plant, so that their mid-ribs are undamaged. As the leaves are pulled off the stems, they are classed into at least three grades, and in this classing, texture, color, size, and soundness will be the main considerations. After having been tied into hands, they are rehung in the shed close together, making sure that the various grades are kept separate.

## CONDITIONING THE LEAF.

Before curing (sweating), the dried leaves must be "conditioned," by allowing them to take up enough moisture to soften them; and this is done by either opening up the shed on a dewy night, or by placing wet straw on the floor of the shed. Care must be taken that the leaves are not too moist before starting the cure, or they will damage badly; the correct condition of moisture is when the leaf itself has become tough and pliable, but the mid-rib of the leaf still dry enough so that it will crack when doubled over at a point about two-thirds along its length.

## CURING THE LEAF (BULKING OR SWEATING).

When in proper condition, the tobacco is taken from the tiers and packed upon a platform in the shed (a foot or so above the shed floor), and so stacked that all the butts of the hands are to the outside, and the stacks can be as much as 5ft. or 6ft. in height. As soon as the stack is finished, it is covered with tarpaulins or bagging. The stack must be carefully watched, and on each occasion that the temperature rises above 80deg. Fahr., it must be pulled down and rebuilt, being careful at each rebuilding to place the hands that were on the outside in the centre, and *vice versa*. This rebuilding of the stack will not be necessary more than three times, and in many cases will not need to be done at all. The sweating of the leaves will take from three to four weeks, and after that time is ready to be baled for market.



## CURING A SMALL QUANTITY OF TOBACCO.

A small quantity of tobacco is much more difficult to cure than is a large amount, but a smokable article should be made if treated in the following manner:—

1. The leaves should be picked as soon as mature, *i.e.*, when they have become roughened and mottled with yellowish patches.

2. The picked leaves are allowed to wilt in the sun for a half-hour or so.

3. After wilting, the leaves are threaded on strings, using an ordinary bagging needle to pierce the leaf-stalks. To prevent the leaves from twisting badly, they are threaded so that Nos. 1 and 2 are face to face, Nos. 2 and 3 back to back, Nos. 3 and 4 face to face, and so on. The leaves are spaced about one inch apart on the strings.

4. These strings of leaves are hung up in a closed shed to dry, in such a position that they will not dry too quickly at first. As soon as all of the leaves have become a nice yellow color, they should be dried out quickly, which can be done by hanging them high up near the roof of a galvanized-iron shed.

5. The dried leaves should remain hanging in the shed until the approach of the spring season, say, until August, then taken down and sweated. Whilst awaiting the approach of the spring, the dried tobacco must be carefully watched to see that it does not get moist enough to permit of the development of moulds, &c.

6. Before sweating, the dried leaves must be "conditioned," *i.e.*, allowing them to take up enough moisture to soften them, by either opening up the shed on a dewy night or by putting wet straw on the floor of the shed. Care must be taken that the leaves are not too moist before starting the cure, otherwise they will damage badly; and the correct stage of moisture is when the leaf itself has become tough and pliable, but the mid-rib of the leaf still dry enough so that it will crack when doubled over about two-thirds along its length.

7. When in proper condition, the leaves should be straightened out and carefully packed in a box which is not too airtight, placing the leaves so that the butts of the leaf-stalks are all on the outside and the tips of the leaves in the centre.

8. When all the leaves are in the box, sufficient weight should be put on top of the tobacco to slightly press it together, but heavy weights should not be used.

9. Whilst undergoing the "sweat" the tobacco must be carefully watched, and if a noticeable rise in temperature takes place, the box should be emptied, each leaf given a shake to air it, and then be replaced in the box, in the same manner as before. Each time that the temperature rises above 80deg. Fahr., it should be rebulked; but, at the most, this should not happen more than three times.

10. After three or four weeks in the box, the sweat will have finished, and the article will be ready for use, and, with ordinary care, will keep for years.

### HARVESTING AND CURING CIGAR TOBACCO.

A. Special care is necessary in harvesting cigar tobacco, owing to the need of a very thorough fermentation, and best results are likely to be obtained if the plants are harvested before the leaves are quite mature, and then only cut between the times of the disappearance of dew in the morning and approach of the hottest part of the day. This cutting before over-ripe tends to produce leaves of finer texture and lighter flavor than would otherwise be the case.

B. When cutting, the plants are not split as in the case of plug tobacco, but are cut off close to the ground. The plants are left whole, so that they dry slowly, which fosters the useful enzymes, and so allows the necessary thorough fermentation to be brought about, and it also tends to produce good color and flavor in the leaf, both of which qualities are injuriously affected by rapid drying.

C. After cutting, the plants are only left lying on the ground in the sun long enough to soften them, and are then carted straight to the drying shed.

D. The wilted plants are fixed to the sticks for hanging by tying the butts of alternate ones to opposite sides of the sticks, and each plant is then well shaken out before hanging the stick in its position in the shed.

E. No artificial heat is used in the drying of cigar tobacco, and as it is done by regulating the air and moisture, the drying shed must be so constructed that the ventilation is under full control, to the extent of allowing much air to pass through, or to be able to make the shed close. During drying, this type of tobacco must not be permitted to become over-moist nor very dry, and so must be carefully watched throughout the operation.

F. A very thorough fermentation is necessary to properly cure cigar tobacco, and it is very difficult and needs much experience to know just how far to go with this process; so much so that in America most of this work is done by manufacturers and middlemen, and not by the growers. When the curing season arrives, the leaves are stacked in the same way as for plug tobacco, but whilst being bulked the tobacco is watered so that the leaves contain from 20 per cent. to 25 per cent. of moisture. After stacking, the temperature begins to rise fairly rapidly, but if the daily increase exceeds 10deg. to 12deg. Fahr., the bulk is pulled down and rebuilt. Throughout the sweat a uniform temperature of 85deg. to 110deg. Fahr. must be maintained, and so rather elaborate sweating rooms are essential if this operation is to be easily carried out. When the generation of heat in the bulk is finished, the stack is opened up, and the leaves allowed to dry a little before being graded and packed.

### FLUE-CURING LIGHT TOBACCOS.


All tobaccos to be used for the manufacture of cigarettes and light, bright plugs should be cured by the application of artificial heat in flue-curing barns. For the purpose a building is necessary which is

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practically airtight, with ventilators at the bottom of the walls and in the roof, and with a flue running around the inside of it, on or near the floor, to which the heat is supplied by a wood fire in a stove placed outside the building. In practice it is found best to have that building high in proportion to its size, and for every 5 acres or 6 acres of crop, it is usual to erect a barn about 16ft. square and 17ft. to 21ft. in height to the eaves, and in this a flue 12in. in diameter passes right around the inside of the building, about 2ft. from each wall. Thermometers (dry bulb and wet bulb) are placed inside, and one outside, this building, and the temperature and moisture are regulated by increasing or reducing the fire and the ventilation.

#### THE TEMPERATURES USED IN CURING.

The Victorian Tobacco Expert (Mr. Temple A. J. Smith) uses the following formulae for the flue-curing of the light tobaccos grown in temperate climates:—

##### I. LEMON BRIGHT TOBACCO.

As soon as wilted sufficiently in the field after harvesting, the plants or leaves should be hung in the flue-curing barn, and the fires started. The temperature will then be regulated as follows, for the various processes:—

1. *Yellowing Process* consists in raising the temperature to between 90° and 95° Fahr. and keeping at that for from 24 to 30 hours, and during the first part of the period the vents should be kept closed.

2. *Fixing the Color* will take about four hours at 100° Fahr., then it should be raised 2½° every hour until 110° is reached, and finally the temperature is raised to 120° Fahr. over a period of from four to eight hours.

3. *Killing the Leaf* is done by taking the temperature from 120° to 125° Fahr. in from six to eight hours.

4. *Curing the Stalk* is done by raising the temperature 5° Fahr. per hour from 125° to 160° Fahr., and this latter temperature is maintained until all moisture is driven out of stem and stalk.

#### GENERAL DIRECTIONS.

Until experienced, it is safer for the tobacco-curer to do the curing slowly, rather than too rapidly.

The flue-curing barn should be filled in one day, and the fires started in the evening of that day.

If the temperature of the air outside the shed is above 90° Fahr., the temperature inside the shed should be started at 5° Fahr. higher.

The tobacco in the shed should be made to sweat within eight to 10 hours after starting the fires, and a little water sprinkled on the floor of the barn will assist this sweat.

At 10 hours after starting the cure, the wet-bulb thermometer should show 3° to 4° Fahr. less than the dry-bulb thermometer, and at 20 to 30 hours, 7° to 8° Fahr. less.

Do not go above 100° Fahr. until a yellow color shows in two-thirds of the tobacco.

Do not leave 110° Fahr. until the tips of the leaves curl, and at the same time open top and bottom ventilators a little.

Do not increase temperature above 115° Fahr. until the sides of the leaves curl round, and then the moisture can be driven off by opening up ventilators and increasing the temperature.

From now on the tobacco will want careful watching, and the temperature must not be raised too quickly, as the leaf will scorch and go a blackish color, nor too slowly, as brown splotches will appear on the leaf, due to moisture settling on the surface of the leaf. If the leaf is being reddened the temperature should be reduced, and if brown splotches appear, the ventilators should be opened and the temperature increased.

The danger of severe injury is not great after the leaf-blade is cured dry, and when this happens the mid-ribs of the leaves are dried out by raising temperature slowly, and gradually closing the ventilators.

The tobacco is cured when the stalks have been dried out.

The shed can now be opened up and water sprinkled on the floor to "condition" the leaf, and it can be immediately "bulked" down.

The bulk should be covered to keep as dark as possible, because light has a tendency to affect the color.

## II. MAHOGANY TOBACCO.

After harvesting the plants, they are hung on scaffolds, packed closely together, or in an open shed, for six to 10 days, until the leaves have become yellow in color, when they are placed in the flue-curing barn, and the temperature regulated as follows:—

1. The temperature is raised to 100° Fahr., and kept at that for four hours, after which it is raised 2½° per hour until 130° Fahr. is reached.

2. The temperature is kept at 130° Fahr. until the leaves are cured, and is then gradually raised to 160° Fahr., and maintained at that until stems and stalks are dried out.

The tobacco can now be conditioned by allowing it to take up moisture, and be bulked down the morning after the heating has been completed.

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## FRUIT TREES AND GRAPE VINES.

### PRUNING COMPETITIONS ON THE RIVER MURRAY SETTLEMENTS.

A series of fruit tree and grape vine pruning competitions have been arranged by Branches of the Agricultural Bureau on the River Murray settlements. The programme is as follows:—

Date.	Place.	Scope.
Tuesday, June 7th . . .	Waikerie	Competitors will be invited from Waikerie, Ramco, Holder, Murray View, Cadell, and New Era.
Wednesday, June 8th . .	Moorook	Competitors will be invited from Moorook, Kingston, and Pyap.
Friday, June 10th . . .	Berri	Competitors will be invited from Berri, Glossop, Cobdogla, Barmera, Monash, and Lyrup.
Saturday, June 11th . . .	Renmark	Competitors will be invited from Renmark and surrounding districts.

### GENERAL CONDITIONS.

Committees in each district are arranging for the place and general conduct of the competitions. For the guidance of likely competitors, it is mentioned that on entering the grounds on which the competition is being held, they will be in the hands of the judges, and will act according to the directions of the judges in all respects. Judges will have the power to stop the work of any competitor who they think is acting in any way detrimental to the orchard in which the competition is being held.

### CLASSES.

The competitions will be divided into two (2) classes, namely, vine pruning and fruit tree pruning. In each case judging will be according to the scale of points set out below.

### VINE PRUNING COMPETITIONS.

- (1) In this class each competitor will be required to prune—
  - (a) Five vines of the Muscat Gordo Blanco type.
  - (b) Five vines of the Zante currant type.
  - (c) Five vines of the Sultana type.
- (2) The first named (a) are to be pruned on the bush system.
- (3) The second named (b) are to be espalier spur pruned.
- (4) The third named (c) are to be espalier rod and spur pruned.
- (5) The competitors will be required to twist and secure the rods to the trellis wires in the case of the Sultana vines.

(6) The time to be allowed for each class will be determined by the various committees after examination of the vines and trees to be pruned in their respective districts. All competitors will be required to cease work on expiration of time allowed. The judges, in conjunction with the stewards, will be allowed to take points from competitors who have not completed their vines or trees in the given time. This will be at the judges' discretion. In the event of two (2) or more competitors gaining equal points in any one class, the competitor who finished his work first will be awarded the first prize.

(7) The judges will allot points to each competitor in accordance with the scale set out below:—

Type.	Division.	Points.
Gordo . . . .	Selection of fruiting wood . . . . .	20
	Shaping of vines . . . . .	6
	Clean cutting . . . . .	4
Currant . . . .	Selection of fruiting wood . . . . .	20
	Shaping of vines . . . . .	6
	Clean cutting . . . . .	4
Sultana. . . .	Selection of fruiting wood . . . . .	12
	Twisting the canes . . . . .	12
	Shaping the vines . . . . .	12
	Clean cutting . . . . .	4

#### FRUIT TREE PRUNING.

(1) The competitors will be required to prune:—(a) One peach tree; (b) one apricot tree; (c) one pear tree.

(2) The time allowed for each class will be determined by the committees after examination of the trees to be pruned in their respective districts. All competitors will be required to cease work on expiration of time allowed. The judges, in conjunction with the stewards, will be allowed to deduct points from competitors who have not completed their vines or trees in the given time. This will be at the judges' discretion. In the event of two (2) or more competitors gaining equal points in any one class, the competitor who finishes his work first will be awarded the first prize.

(3) Judges will allot points to each competitor in accordance with the scale set out below:—

Type.	Division.	Points.
Peach . . . .	Selection and treatment of fruiting wood . .	15
	Selection and treatment of leaders and shaping of tree . . . . .	15
	Clean cutting . . . . .	10
		15
Apricot. . . .	Selection and treatment of fruiting wood . .	15
	Selection and treatment of leaders and shaping of tree . . . . .	10
	Clean cutting . . . . .	5
		12
Pear. . . .	Selection and treatment of fruiting wood . .	12
	Selection and treatment of leaders and shaping of tree . . . . .	12
	Clean cutting . . . . .	6

## WAIKERIE.

In the event of it being found impossible to secure suitable bush vines in the Waikerie district, the committee will substitute espalier pruned Muscat Gordo Blanco or Doradillo vines in lieu thereof. This will apply in the Waikerie district competition only.

## CHAMPIONSHIP COMPETITIONS.

Championship competitions will be held at Berri on Tuesday, June 14th. Arrangements will be in the hands of the committee, consisting of one representative from the Waikerie, Moorook, Renmark, and Berri Committees, with the Chairman and Secretary of the Berri Committee as *ex officio* members.

## STEWARDS.

Stewards will be appointed for the championship competitions by the committee responsible.

## COMPETITORS.

The championship competitions will be open to the persons placed first, second, and third, respectively, in the district competition.

## MURRAY BRIDGE HERD TESTING SOCIETY.

## RESULTS OF BUTTERFAT TESTS FOR JANUARY, 1921.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk for Month.	Butterfat for Month.	Average Milk per Cow for Month.	Average Butterfat per Cow for Month.	Average Butterfat per Cow for Four Months.
			lbs.	lbs.	lbs.	lbs.	lbs.
1/A	12	10-61	5,987	292-10	498-02	24-34	105-70
1/B	14	13-39	9,745	395-32	696-07	28-24	115-78
1/C	45	38-26	23,663	908-35	325-84	20-18	91-08
1/D	20-45	15-61	8,771-5	424-86	428-89	20-77	80-17
1/E	14	12-84	9,184-5	461-46	656-04	32-96	93-28
1/F	11	10	5,967-5	238-85	542-50	21-71	95-18
1/G	43-94	37-16	35,094-5	1,265-29	798-77	28-80	118-98
1/H	14-35	12-52	8,530	348-41	594-22	24-27	79-66
1/I	15	13-71	10,022-5	412-27	668-17	27-48	119-47
1/J	15-32	15-32	12,313	551-36	803-59	35-98	121-43
1/K	14	10-90	7,316-5	311-95	522-61	22-28	81-99
1/L	13	11-13	7,364	347-33	566-46	26-72	113-92
1/M	20-10	16-06	7,991	362-58	397-63	18-04	78-36
1/N	20	20	12,524	548-99	626-20	27-45	78-06†
1/O	26	22-23	14,673-5	626-46	564-37	24-09	52-27*
1/P	21	18	10,834-5	437-52	515-93	20-83	39-91*
1/Q	17-16	14-19	11,301	441-76	658-52	25-74	49-01*
MEANS for January .....					592-04	25-29	—
MEAN per month, October to January .....							24-82

† For three months only.

† For two months only.



## DAIRY AND FARM PRODUCE MARKETS.

A. W. Sandford & Co., Limited, reported on May 1st, 1921:—

**BUTTER.**—Local supplies of butter during April have kept up remarkably well, the early rains being of great benefit to northern factories. Fair quantities of imported have come along from the neighboring States, but at the close of the month the market here was in a very peculiar position, as there was not sufficient 92 points butter for requirements, whilst, on the other hand, there was a big surplus of 90 points. Local buyers preferred to pay the difference in price to secure the top grade article, so that those interested in dairying should be most careful and see that first quality cream is sent forward, for second and third grades are quite unsaleable on this market at something like 6d. to 7d. per lb. under top quality. At the close of the month first grade factory and creamery in prints sold from 1s. 11d. to 2s. 1d.; second grade factory and creamery, 1s. 6d. to 1s. 7d.; best separators and dairies, 1s. 8d. to 1s. 11d.; fair quality, 1s. 6d. to 1s. 7d.; store and collectors' lines, 1s. 3d. to 1s. 5d.

**EGGS.**—During the month a seasonable shrinkage has been noticeable, and prices have continued to advance throughout the period. Present rates are:—Fresh hen, 2s. 4d.; duck, 2s. 5d.

**CHEESE.**—Demand has been exceptionally heavy locally, and consignments coming from the South-East have been hardly equal to trade requirements, and in consequence prices have firmed, the range being from 13½d. to 14½d. for new make and 1s. 2½d. to 1s. 3d. for matured.

**HONEY** shows an advance of 1d. per lb., but this only applies to prime clear extracted. Nice export orders have been received, and these have cleared stocks that were accumulating. Present price, 5½d. prime clear extracted; seconds, 3½d. Beeswax is saleable at 2s. for good samples.

**ALMONDS.**—It is reckoned in some quarters that the crop is a light one this year, and, therefore, buyers are operating freely to secure their wants. Brandis selling at 10d., mixed softshells 9d., hardshells 4½d. to 5d., kernels 1s. 7d.

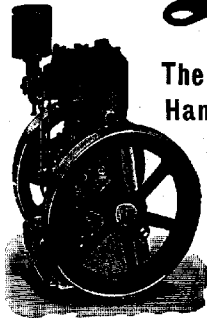
**BACON.**—Values in the Eastern States have come back to the extent of about 2d. per lb., though the easing here has not been so great. Best factory-cured sides selling at 1s. 5d. to 1s. 6d., middles 1s. 7d. Hams slow of sale at 1s. 6d.

**LIVE POULTRY.**—Owing to the easing in price of fresh meat, values in live poultry have been reduced. However, the demand has been equal to all coming forward, and nice clearances have been effected. Present prices should continue to rule. Present values are:—Prime table roosters, 4s. to 6s. 3d.; nice-conditioned cockerels, 3s. to 3s. 11d.; plump hens, 3s. 6d. to 5s. 3d.; light birds, 2s. 6d. to 3s. 5d. (a few pens of weedy sorts lower); ducks, 2s. 6d. to 5s. 9d.; geese, worth 6s. to 7s. 6d.; turkeys, 1s. 3d. to 1s. 9d. per lb. live weight for prime conditioned; fair conditioned, 11½d. to 1s. 2½d. per lb.; pigeons, 5d.

**POTATOES.**—The market has eased since last report owing to the heavy supplies arriving from Victoria and South-East. Best Victorians are worth to-day 8s. to 9s. per cwt.; Millicent Redskins, 7s. 10d. to 8s. on rails Mile End.

**ONIONS.**—These also are easier, and as the production is very heavy, prices are likely to remain low for some time.

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Shearing  
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— THE —

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Used by 3,000,000 farmers who wanted and got the best and closest skimming. All who put the “Alfa” to the test declare that for clean skimming, easy turning, and all round general efficiency it stands supreme. Prepare for the coming season by purchasing an “Alfa” now. Allowances made on old machines. Write for Illustrated Catalogue and full particulars.

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GRENFELL STREET.

## THE AGRICULTURAL OUTLOOK.

### REPORTS FOR THE MONTH OF APRIL.

The following reports on the general agricultural condition and outlook of the areas represented by the Government Experimental Farms mentioned below have been prepared by the respective managers:—

**Booborowie.**—Weather—Throughout this month the weather has been of a mild character, with an occasional cool change; some warm days and cool nights, with no rain, up to April 28th. A good rain is urgently needed to ensure a regular germination of cereal crops, as there is sufficient moisture in fallow land to destroy seed sown. Crops—There are no cereal crops, but lucerne fields that have not been recently grazed are looking well. Natural feed is plentiful, but the green feed is badly in need of a good rain. Stock are all in good condition. Pests—Thistles of all kinds are numerous. Miscellaneous—Seeding is fairly general.

**Eyre Peninsula.**—Weather—Have had small rain, but weather during latter part of the month has been dry, with very changeable winds and temperatures. Rain has threatened on several occasions, but has always passed off. Crops—No new crops sown. Orchard, castor oil beans, lucerne, and olives all doing exceptionally well. Stubbles not burnt are very green with self-sown feed. Natural feed making wonderful growth, there being an abundance. Stock—All in splendid condition and free from disease. Pests—Mice becoming very numerous and troublesome. Miscellaneous—Scrub burning progressing very slowly, but the weather is favoring it during latter half of this month.

**Kybybolite.**—Weather has been fairly typical of April conditions; quite a lot of fine days, with a good sprinkling of calm dull days. A good in. of rain fell in the middle of the month, which helped seeding operations considerably. Crops—The early sown cereals for green feed, mostly oats, have germinated well, and made a good start. Ploughs have been fairly constantly at work, preparing for the general seeding, but more rain is needed to soften a lot of the soils, and to ensure good germination of cereals sown later in the month. Natural feed is starting well, but more moisture is needed almost at once to ensure satisfactory feed for May lambs.

**Turretfield.**—Weather—This month has been very dry, only 30 points of rain having fallen. Hot days and drying winds have done harm, making the fallow very dry and hard. Crops—Farmers are waiting for rain before starting seeding. Natural Feed—There is no natural feed left; any that started in February or March has burnt off. Stock—A great deal of sickness, especially amongst horses, has cropped up; digestive troubles following the feeding on poor hay, and the horses trying to pick up the short green grass in March. Pests—Mice and rats are becoming very numerous.

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Lowest Quotations on Application to Ourselves or Country  
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ADELAIDE AND BRANCHES.

## ORCHARD NOTES FOR MAY FOR THE SOUTHERN DISTRICTS.

[By C. H. BEAUMONT, Orchard Instructor.]

Fruit will have been all picked and disposed of, either in the market or in the cool store. The cool store is one of our best friends if care is taken to pack only suitable grades of fruit, but it is not advisable to store fully matured fruit, or the very large sizes, or fruit from young trees.

Much of the fruit harvested this year has been of the best quality, good to look at and wholesome to eat; but there has also been a lot of very inferior fruit picked, stuff that I would class as not fit for human use, yet the growers have not scrupled to offer it for sale, and some folks have been unwise enough to buy it because it was "cheap." It is certainly the poorest bargain anyone could make, to buy some of the rubbish such as I have seen sold at Mount Barker lately. Olives will soon be ready to pick; they are valuable.

Pruning and ploughing will be the work of the month. It is not possible for me to go into details of pruning in these short notes. If you are in doubt write to the office, and an instructor will call on you and demonstrate the best method. As a general principle, err on the side of too little cutting rather than too much when dealing with trees in bearing; forming young trees is quite another matter.

To get the best results from your soil, it must be well worked. I advocate ploughing twice every year—once to the trees, and then in spring away from the trees. On hillsides, however, it is good practise to sow some cover crop not later than April—peas or barley, to hold the soil and to plough in at the second ploughing.

Make provision for dealing with excess surface waters if possible, so as to prevent loss of soil by erosion. In soils which hold the water it is better to arrange a good system of under-drainage.

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### ERADICATING BRIARS.

One of the best methods of eradicating briars, according to the Horticultural Instructor (Mr. Geo. Quinn) is to pull them up during the wet season, when the ground is soft, by means of chains and a team of horses or bullocks. If this be followed up in the succeeding spring and summer with the grubbing axe, to remove any small shoots which may arise from broken stems, the pest will be pretty well eradicated.

## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

### CONFERENCE OF SOUTH-EASTERN BRANCHES.

The Annual Conference of South-Eastern Branches of the Agricultural Bureau which was held at Glencoe on April 7th was a success from every point of view. The attendance was good, and right throughout the meeting a fine spirit prevailed. The chair was occupied by Mr. John Riddoch, who was supported on the platform by the Chairman of the Advisory Board of Agriculture (Mr. C. J. Tuckwell), the Horticultural Instructor (Mr. Geo. Quinn), the Assistant Dairy Expert (Mr. H. J. Apps), the Manager Government Experimental Farm,



Some of the Delegates who attended the Conference of South-Eastern Branches of the Agricultural Bureau at Glencoe.

Kybybolite (Mr. L. J. Cook), and the Acting Secretary of the Advisory Board (Mr. H. J. Finnis). The Branches represented were Naracoorte, Kalangadoo, Millicent, Mount Gambier, Coonawarra, Penola, Kongorong, Kybybolite, Moorak, and Glencoe. The Chairman of the Board delivered the opening address, immediately after which a paper dealing with the marketing of fat stock in the South-East was read by Mr. D. W. Tucker, of Kalangadoo. This was followed by a paper

by Mr. S. Shepherd, of Kybybolite, dealing with farm tractors. Mr. Shepherd's paper was supplemented by blackboard drawings, illustrating a simple method of ascertaining the horsepower of engines, which considerably added to the interest.

The afternoon session was devoted to Free Parliament. Various questions were replied to by the Manager of the Government Experimental Farm at Kybybolite and the Assistant Dairy Expert.

#### RESOLUTIONS.

The following resolutions were carried:—

1. "That the Government be asked strictly to enforce the personal residence clause of all closer settlement lands."
2. "That the Government be asked to sell by tender those portions of all unallotted repurchased estates for which they had failed to obtain applications."
3. "That the Government should take immediate steps to resume or repurchase any suitable places in the South-East with the object of protecting the natural regeneration of the timber in the South-East."
4. "That this Conference favors the proposal that all bulls over the age of six months pay a registration fee of 10s. per year, the revenue to be devoted to subsidising the sale of pure-bred sires under the proposed scheme."
5. "That this Conference heartily supports the proposed scheme for the sale of approved dairy bulls, as outlined by Mr. Kelly in his addresses to South-Eastern Branches of the Agricultural Bureau."

At the evening session Mr. Bottrill, of Kybybolite, read a paper, entitled "Growing Fruit for Export, Drying and Canning throughout the South-East," and Mr. D. Cameron, of Glencoe, delivered an address.

The outstanding feature of the Conference was the hospitality extended to visitors. The ladies of the Glencoe district provided meals for delegates, and in general attended to their requirements throughout the day.

### ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board was held on Wednesday, April 13th, there being present:—Mr. C. J. Tuckwell (Chairman), Captain S. A. White, and Messrs. F. Coleman, A. M. Dawkins, T. H. Williams, W. S. Kelly, H. Wicks, and the Acting Secretary (Mr. H. J. Finnis). Apologies were received from Professor Arthur J. Perkins and Colonel Rowell.

*Trucking Facilities and Sheets for Eyre Peninsula.*—At the 1920 Conference of Eyre Peninsula Branches it was decided to ask that additional trucking facilities and tarpaulins might be provided to cope with the coming season's super. The matter was referred to the Railways Commissioner, who reported that the matter had been considered,

and arrangements had been made to send over to Port Lincoln without delay 60 additional tarpaulins for use on that division.

*Tax on Motor Tractors.*—The Mallala Branch asked if motor tractors were liable to the motor vehicles tax, and if so, on which horse power—the drawbar or off the pulley. The Registrar of Motor Vehicles, to whom this matter was submitted, has supplied the following information:—"Tractors must be registered, and are liable for taxation under the Motor Vehicles Tax Act, 1915. The tax is based on the R.A.C. rating as per the formula  $\frac{D^2 \times N}{2.5}$  D, diameter of cylinders, N, number of cylinders.

The drawbar or pulley power is not taken into consideration." The Secretary was instructed to advise the Branch.

*Commonage for Stock at Moorak.*—The Moorak Branch asked that Block E, hundred of Benāra, should be reserved for commonage. The matter was referred to the Secretary for Lands, who intimated that the block in question was allotted to James McCourt for 21 years from April 1st, 1920, for grazing and cultivation.

*Injury to Cattle in Trucks.*—At a previous meeting of the Board the attention of members was drawn to the injury that occurred to cattle whilst travelling in trucks on the northern railway lines. The matter was brought under the notice of the Railways Commissioner, who submitted the following report from the Rolling Stock Inspector:—"I find upon making inquiries from those who are closely connected with the stock traffic on the northern lines, and also from personal observation, that the injury to cattle whilst travelling on the northern lines is mainly due to the animals being in an overcrowded condition in the cattle vans. The type of van complained of is the Class R cattle van, the top rail of which is 1ft.  $\frac{1}{4}$ in. lower than the Class L van, and the buttocks of a large beast comes into contact with this rail. Consequently when the animals are forced through overcrowding to remain in one position for a long period with their buttocks chafing against the rail it is bound to cause the injury complained of, as they cannot get relief by shifting their position. That raising of the top rail would not overcome the trouble is proved by the fact that in the Class L van, although the top rail is over a foot higher and above their buttocks, they are injured in precisely the same way when closely packed by their buttocks chafing on the sides of the van. The recognised load of large beasts in one division of a Class R van is eight, but it seems to be the rule rather than the exception to pack in nine and 10 animals above the average size. Two train loads of cattle from the Great Northern line (Warrina) were booked under such conditions. I inspected nearly 200 vans of cattle from Warrina, Marree, Stirling, and Cockburn at Terowie, in both L and R vans, and in scarcely a single instance were the animals marked when there was a reasonable number in the van." Mr. Williams said the trouble was mainly due to the larger-sized bullocks. The smaller cattle did not suffer. Railway stationmasters should be able to use their judgment in this matter, and not allow crowding. On the motion of Captain White, seconded by Mr. H. Wicks, it was decided:—"That in the opinion of the Board stationmasters should have the right to determine the number of



cattle that should be loaded into any one truck, and that in future, for great cattle, trucks should be built on the plan of the L van."

*Inspector of Apiaries.*—The recent Conference of Lower Northern Branches determined that the time was opportune for the appointment of an Inspector of Apiaries. The resolution was submitted to the Minister of Agriculture, who stated that in view of the financial position no appointment could be made. On the suggestion of the Chairman, the Secretary was instructed to ascertain for the information of the Board full particulars of the extent and value of the bee industry.

*Experimental Farm on Reclaimed Area of the Murray.*—The last Annual Congress carried the following resolution:—"That the Government establish an experimental farm on a reclaimed area of the Murray." The motion was forwarded to the Minister of Agriculture, who stated that in view of the financial position nothing could be done in the matter at present. The Board decided to defer the matter until after next Congress.

*Olive Planting on Parilla Forest Reserve.*—At the last Conference of Pinnaroo line Branches of the Bureau it was decided: "That this Conference recommends that the Government be asked to plant a certain area of olives on the Parilla Forest Reserve." This matter was duly submitted to the Conservator of Forests, who reported as follows:—"It transpires that no young olive trees are available, as the demand for them has absorbed all supplies early last season; nothing can therefore be done under any circumstances this season. In this connection, however, I must point out that as the olive is a fruit tree and not a forest tree, its cultivation does not properly come within the province of the Woods and Forest Department. Some years ago it was decided in Parliament that the temporary issue of vines undertaken for a special purpose, and also a few olives, must be discontinued, in accordance with which ruling no fruit-bearing trees have since been grown. The results of tree-growing in the Parilla reserves have been so poor as to render the prospect of ultimate success in timber growing very remote, and I have on a previous occasion suggested that it should be handed over—after cancellation as a forest reserve—to the Department of Agriculture, seeing that it is admirably adapted for an experimental farm, and if this course could be followed, the State Horticulturist could readily carry out the cultivation of the olive as desired." On the suggestion of Captain White, it was decided: "That it be a recommendation to the Department of Agriculture to establish experimental plots for testing the possibilities of olive growing in the Parilla district."

*Improving Dairy Sires.*—The Board expressed its agreement with the scheme outlined by Mr. Kelly for the improvement of dairy sires (see March-April *Journal of Agriculture*, page 763). Mr. Dawkins said he had carefully read Mr. Kelly's proposed scheme, and he thought it was one of the most practical and reasonable suggestions that could be adopted to help wipe out the mongrel bull. Mr. Kelly said that during his recent series of addresses in the South-Eastern districts he had met with no opposition to the general idea of the

scheme. He was quite sanguine of its success, and believed that it would become operative. Mr. Coleman was very glad to have the opportunity of supporting the scheme. He believed that if some such plan were adopted it would have the effect of displacing the scrub bull. On the motion of Captain White, seconded by Mr. Coleman, it was decided that steps should be taken to introduce a scheme to subsidise pure-bred bulls, as outlined by Mr. Kelly. The Secretary was instructed to forward the resolution to the Minister, with the support of the Board.

*Clearing Scrub Land.*—At the last Minnipa Conference it was decided:—"That settlers in mallee hundreds in all parts of the State, and particularly on Eyre Peninsula, be relieved of their obligations in respect to the clearing of scrub to the extent of the value that they can conserve water." The Secretary for Lands to whom this matter was referred reported as follows:—"The Land Board cannot recommend that the obligation for clearing of scrub under leases should be waived to the extent of the value of water conserved by a lessee. The clearing condition was introduced to insure *bona fide* occupation and development of land some years back, and filled a long-felt omission and necessity. While the administration is just and reasonable, no hardship can possibly be inflicted on any lessee who shows honest endeavor in the development of his holding. Should the provision of water improvements prevent the lessee from effecting the specified area of clearing in any year, it would only be necessary to state his case to the department when applying for exemption, and such would doubtless receive favorable consideration."

*Protest against High Freights.*—The Smoky Bay Branch passed a resolution protesting against the high freight charges on wheat from Smoky and Laura Bays to Thevenard, 5½d. and 6¼d. per bushel. The Board was of the opinion that this matter did not come within its scope, and regretted that no action could be taken. The Secretary was instructed to advise the Branch of the decision of the Board.

*Pruning Competitions.*—The Secretary reported that steps had been taken to hold pruning competitions on the River Murray settlements. On the motion of Mr. H. Wicks, seconded by Mr. A. M. Dawkins, it was decided to ask the Minister that travelling expenses for the judges might be provided by the Government. At the instance of Captain White, seconded by Mr. W. S. Kelly, it was also decided that the Government be asked to donate two silver cups for the winners in each section of the championship, and certificates of merit to all those competitors who were awarded 80 per cent. or over of the total number of points.

*Veterinary Surgeon for the West Coast.*—A communication was received from the Petina Branch asking that in the event of a veterinary surgeon being appointed for the Peninsula, he might be stationed at Minnipa. The Secretary was instructed to advise the Branch that as the appointment of a veterinary officer was still under consideration, it would be better to leave the exact location of the officer out of the question. The Board felt that the discussion of the place of residence, should the officer be appointed, would tend to weaken the case for the Eyre Peninsula Branches.

*Duplicate Cartnotes for Wheat.*—The Chairman (Mr. C. J. Tuckwell) drew the attention of the Board to the fact that farmers were apparently not receiving duplicate cartnotes for wheat delivered to agents. The Board decided to defer consideration until after the next Annual Congress.

*Destination of Docked Wheat.*—The following resolution was carried at the recent Conference of Mid-Northern Branches:—"That this Conference protests against the action of the Wheat Scheme in stacking docked wheat with good f.a.q. samples at receiving centres." The Franklin Harbor District Conference also asked:—"What becomes of the inferior wheat that receives a dock." The Board decided that the Minister should be asked to ascertain from the Wheat Scheme what becomes of the inferior wheat that has received a dock.

The following resolutions were received from the Mid-Northern Conference:—(1) "That the present price of superphosphate is too great to help primary production from the primary producers' standpoint;" (2) "that the system of weighing adopted by the Wheat Board is unfavorable and unjust;" (3) "that the farmers are not satisfied with the system of dockage, and protest against the incompetence of the persons in charge." Received. Franklin Harbor District Conference:—(1) "That in the opinion of this Conference it is desirable that steps should be taken to insist on wheat buying agents using standard measures for the purpose of determining the bushel weight of wheat." It was decided to ask the Director of Agriculture for an expression of opinion on this matter. (2) "That in the opinion of this Conference the Government should, in opening up new hundreds, take steps to ensure the preservation of the natural scrub on any places that are likely to drift in the event of the timber being removed." It was decided to submit the matter to the Minister with the full support of the Board. Kadina Conference:—"That the Wheat Harvest Board be asked to determine the relative milling values of bleached and unbleached wheat by gristing 50 bags of each." The Secretary was instructed to communicate with the Wheat Scheme with the idea of obtaining the desired information. South-Eastern Conference:—(1) "That the Government be asked strictly to enforce the personal residence clause of all closer settlement lands." This matter originated from the Kongorong Branch, and the Secretary was instructed to ascertain from that Branch the numbers of the blocks the owners of which were not complying with the Act. (2) "That the Government be asked to sell by tender those portions of all unallotted repurchased estates for which they had failed to obtain applications." It was decided to forward the matter to the Minister. (3) "That the Government should take immediate steps to resume or repurchase any suitable places in the South-East with the object of protecting the natural regeneration of the timber in the South-East." This matter had the hearty support of the Board, and the Secretary was instructed to forward the motion to the Minister. (4) "That this Conference favors the proposal that all bulls over the age of six months pay a registration fee of 10s. per year, the revenue to be devoted to subsidising the sale of pure-bred sires under the proposed scheme." It was decided to transmit the

resolution to the Minister. (5) "That this Conference heartily supports the proposed scheme for the sale of approved dairy bulls, as outlined by Mr. Kelly in his addresses to South-Eastern Branches of the Agricultural Bureau." Resolution to be submitted to the Minister.

*Analysis of Bluestone.*—Mr. F. Coleman brought under the notice of the Board the fact that many complaints were heard regarding the strength of bluestone offered for sale at the present time. Speaking of the various methods adopted by farmers for pickling, Mr. Coleman said he utterly condemned that practice of immersing a whole bag of wheat in a cask. One could not expect the solution to come into contact with every grain of wheat. The best and safest way was to throw the wheat over and over with a shovel. He thought it was best to pickle the grain about a week before seeding. The Secretary was instructed to ascertain whether any recent analysis of bluestone had been made.

*Leave of Absence.*—Three months' leave of absence was granted to Mr. H. Wicks, who intends making a business trip to Fiji. Leave of absence was also granted to Captain S. A. White, who is undertaking a trip to Queensland.

*New Branch.*—Approval for the formation of a new Branch of the Bureau at Virginia was given, with the following gentlemen as foundation members:—Messrs. W. Lang, A. Townsend, N. Hall, P. Baker, S. Clements, I. Baker, K. Smitham, T. O'Loughlin, A. Hatcher, A. Taylor, M. Maloney, W. Wright, J. Ryan, W. King, C. Clements, T. Barker, H. Spehr, W. Taylor.

*Branch to be Closed.*—It was decided to close the Woodleigh Branch.

*New Members.*—The following names were added to the rolls of existing Branches:—Miltalie—R. E. Pitt, T. J. McEachen; Red Hill—A. B. Leaney; Paskeville—S. Ganson; Meribah—A. A. Marsh; Mount Barker—J. W. Stevens, G. Shange, — Clayton; Williamstown (Ladies')—Mesdames H. N. Wilson, Geo. Brown, J. N. Patterson, F. Walker, G. G. Wilson, Messner, W. Hill, A. W. Holmes, Miss R. Hamilton; Petina—N. E. Daniels; Salisbury—H. Duell, Chas. White, jun.; Longwood—R. Higgins; Naracoorte—A. Farrow, S. R. Tynan; Mount Gambier—J. Livingston; Glencoe—G. Duke; Williamstown—G. T. Thyer, C. Daley, G. Daley, S. Trestrail, G. E. Cundy, W. E. Grigg, T. Bennett, J. Grigg, W. Lane; Maitland—S. J. Jones; Mallala—H. Chapple; Roberts and Verran—H. Smith; Barmora—R. Kerr, A. E. Jones, M. Marcus, E. A. Easter, C. Duffy, F. Horton, T. D. Jenkins; Pine Forest—G. Luckett; Rosy Pine—L. R. Wilson, L. Hill, B. Hill, H. Ricketts, M. Dreckow; Lone Gum—B. V. Tydeman, A. B. Mortimer, A. Harvey, J. Hurst, A. H. Heath, — Colley; Wilkawatt—D. Thompson; Mount Barker—F. Williams; Lameroo—H. E. Crispe; Morphett Vale—E. Day; Frances—J. McLean; Taplan—H. L. Tomlinson; Hartley—D. W. Freestun, S. L. Lock, H. J. Harvey, J. Harvey; Yandnarie—W. J. Barnes; Meadows—V. Harvey; Moorook—C. Thomas, G. Scott, G. Twiss; Mundalla—T. H. C. Windebank, F. Wallace; McLauchlan—G. A. Edwards; Gawler River—J. W. Thomas; Balaklava—A. Roberts; Williamstown (Ladies')—Mesdames K. Woolford, A. E. Williams, J. J. Fry, Misses E. Ross, K. Ross, C. McLaughlin; Wirrabara—H. C. G. Roberts.

## EGG-LAYING COMPETITION, 1921-1922.

HELD AT THE PARAFIELD POULTRY STATION, PARAFIELD, UNDER THE DIRECTION  
OF D. F. LAURIE (GOVERNMENT POULTRY EXPERT AND LECTURER).

Total No. of Pens.—Section I., Light Breeds (Single Testing), 24—3 pullets in each entry. Section II., Heavy Breeds (Single Testing), 13—3 pullets in each entry. Section III., Light Breeds, 1 pullets in each pen. Section IV., Heavy Breeds, 9—6 pullets in each pen.

TWELVE MONTHS' TEST. TO START ON MARCH 1st, 1921, AND TO TERMINATE ON FEBRUARY 28th, 1922.

## SECTION I.—LIGHT BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Row No.	Name and Address.	Bird No.	Month ending 30/4/21.	Score to Date.	Bird No.	Month ending 30/4/21.	Score to Date.	Bird No.	Month ending 30/4/21.
WHITE LEGHORNS.									
E	Bamford, W. H., 74, Adelaide Road, Glenelg	1	17	20	2	12	14		
E	Connor, D. C., Gawler	4	—	15	5	4	9	6	—
E	Willington, Mrs. G., Milang	7	17	36	8	—	8	9	—
E	Nancarrow, J. T., Plympton	10	—	4	11	—	9	12	5
E	Broadview Poultry Farm, Seaton Park	13	2	21	14	3	13	15	—
E	Stevens, H. J., Broken Hill	16	—	13	17	—	—	18	5
E	Monkhouse, A. J., Woodside	19	3	15	20	1	13	21	1
E	Turvey, D. J., Milang	22	—	1	23	—	—	24	—
E	Lampert, Mrs. S., Piccadilly	25	—	1	26	—	—	27	—
E	Nancarrow, J. T., Plympton	28	—	18	29	—	—	30	—
E	Small, E. W., Mount Gambier	31	—	—	32	—	—	33	—
E	Coleman, A. C., Grange	34	—	—	35	—	—	36	—
E	Broadview Poultry Farm, Seaton Park	37	7	11	38	4	20	39	1
E	Holmes, F. A., Naracoorte	40	—	—	41	—	—	42	—
E	Lampert, Mrs. S., Piccadilly	43	—	18	44	—	7	45	—
E	Green, F. W. H., Monteith	46	—	6	47	7	20	48	—
E	Howie, H. H., Mount Gambier	49	—	—	50	—	8	51	7
E	Willmott, H. J., Clarence Park	52	—	—	53	—	—	54	—
E	Stockman, A., Goodwood	55	6	17	56	—	1	57	—
E	Green, A. J., Crystal Brook	58	6	13	59	6	9	60	4
E	Herbert, C., Alberton	61	—	—	62	—	—	63	—
E	Blake, Mrs. B. L., Berowra, N.S.W.	64	7	13	65	4	15	66	7
F	Tilly, P. N., Balwyn, Victoria	1	12	12	2	4	15	3	13
F	Dugan, T., Wingfield Rifle Range, Port Adelaide	4	14	21	5	10	10	6	10

## SECTION 2.—HEAVY BREED (SINGLE TESTING). THREE PULLETS EACH ENTRY.

## BLACK ORPINGTONS.

F	Lampert, Mrs. S., Piccadilly	7	7	28	8	7	19	9	13
F	Shaw, R. R., Crystal Brook	10	—	1	11	—	—	12	—
F	Farr, K. H., Fullarton Estate	13	2	28	14	1	25	15	7
F	Alford, T., Broken Hill	16	19	45	17	4	29	18	22
F	Lampert, Mrs. S., Piccadilly	19	3	3	20	22	41	21	—
F	Holmes, F. A., Naracoorte	22	—	—	23	—	—	24	—
F	Shaw, R. R., Crystal Brook	25	—	—	26	—	—	27	—
F	Wheaton, S. P., Bute	28	—	22	29	—	13	30	—
F	Bansemmer, Mrs. B., Beaumont	31	1	26	32	4	28	33	5
F	Farr, K. H., Fullarton Estate	34	4	28	35	11	26	36	20
F	Mortimer, G., Broken Hill	37	3	28	38	2	23	39	5

## SECTION 2.—HEAVY BREEDS (SINGLE TESTING). THREE PULLETS IN EACH ENTRY.

Name and Address.	Bird No.	Month ending 30/4/21.	Score to Date.	Bird No.	Month ending 30/4/21.	Score to Date.	Bird No.	Month ending 30/4/21.	Score to Date.
RHODE ISLAND REDS.									
Stockman, A., Goodwood .....	40	6	12	41	2	9	42	—	—
Tester, G., Naracoorte .....	43	—	—	44	—	—	45	—	—

## SECTION 3.—LIGHT BREEDS (PEN TESTS). SIX PULLETS IN EACH PEN.

Pen No.	Name and Address.	Breed.	Eggs Laid for Month Ending 30/4/21.	Total Eggs Laid from 1/3/21 to 30/4/21.
1	Anderson, S., Gawler Railway .....	White Leghorns .....	63	143
2	Pugsley, A., Hindmarsh .....	" .....	33	136
3	Connor, D. C., Gawler .....	" .....	31	109
4	Willington, Mrs. G., Milang .....	" .....	26	120
5	Norton Bros., Seaton Park .....	" .....	18	97
6	Nancarrow, J. T., Plympton .....	" .....	18	47
7	Small, E. W., Mount Gambier .....	" .....	36	57
8	Buchan, J. S., Seaton Park .....	" .....	14	119
9	Anderson, J., Prospect .....	" .....	25	82
10	Pugsley, A., Hindmarsh .....	" .....	19	93
11	Alford, T., Broken Hill .....	" .....	27	72
12	Pool, F. J., North Norwood .....	" .....	22	116
13	Nancarrow, J. T., Plympton .....	" .....	57	106
14	Smith & Gwynne, Gawler South .....	" .....	25	150
15	Ratten, C. A., Mile End .....	" .....	44	147
16	Howie, H. H., Mount Gambier .....	" .....	46	168
17	Willmott, H. J., Clarence Park .....	" .....	20	32
18	Anderson, Wm., Kapunda .....	" .....	67	188
19	Herbert, C., Alberton .....	" .....	66	91
20	Sparrow, F. H. L., Beverley .....	" .....	67	175
21	Clee Hill Stud Poultry Farm, Box Hill, Victoria .....	" .....	55	116
22	Beythein, E. W., Scott's Creek .....	" .....	6	74
23	Provis & Sons, W., Tumby Bay .....	" .....	27	100
24	Dugan, T., Wingfield Rifle Range, Port Adelaide .....	" .....	16	89
25	Bansemer, Mrs. B., Beaumont .....	" .....	68	194

## SECTION 4.—HEAVY BREEDS (PEN TEST). SIX PULLETS EACH ENTRY.

26	Lampert, Mrs. S., Piccadilly .....	Black Orpingtons .....	16	143
27	Farr, K. H., Fullarton Estate .....	" .....	44	107
28	Bansemer, Mrs. B., Beaumont .....	" .....	—	—
29	Farr, K. H., Fullarton Estate .....	" .....	31	120
30	Lampert, Mrs. S., Piccadilly .....	" .....	47	185
31	Alford, T., Broken Hill .....	" .....	—	—
32	Clee Hill Stud Poultry Farm, Box Hill, Victoria .....	" .....	47	163
33	Lampert, Mrs. S., Piccadilly .....	" .....	96	219
34	Ryan, Jas., Coburg, Victoria .....	Rhode Island Reds ..	51	180

## DIVISION B.—STANDARD BREEDS ONLY.

19 Pens each of 6 Birds—114 Birds.

COMMENCING APRIL 1ST, 1921. TERMINATES FEBRUARY 28TH, 1922.

Pen No	Name and Address.	Breed.	Eggs Laid for Month Ending 30/4/21.	Total Eggs Laid from 1/4/21 to 30/4/21.
37	*Lampert, Mrs. S., Piccadilly .....	White Leghorns.....	57	57
38	*Newcombe, E. G., Alberton .....	" .....	26	26
39	Packham, C. D., Kensington Park...	" .....	20	20
40	*Beythien, E. W., Scott's Creek .....	" .....	45	45
42	Packham, C. D., Kensington Park...	" .....	19	19
43	*Newcombe, E. G., Alberton .....	" .....	15	15
44	Belmont Orpington Yards, Evandale.	Black Orpington .....	43	43
45	*Lampert, Mrs. S., Piccadilly .....	" .....	44	44
46	*Farr, K. H., Fullarton Estate .....	" .....	11	11
47	Bansemmer, Mrs. B., Beaumont .....	" .....	14	14
48	Addison, Mrs. A. L., Malvern .....	Rhode Island Red .....	12	12
49	*Beer, A. C., Gilberton .....	" .....	27	27
50	Hill, H. V., West Adelaide .....	" .....	22	22
51	*Beer, A. C., Gilberton .....	" .....	32	32
52	Perkins, C. W., North Norwood .....	Silver Wyandotte .....	1	1
53	Addison, A. L., Malvern .....	White Wyandotte .....	12	12
54	Bagshaw, W. E., Hermitage .....	White Rocks .....	45	45
55	Bagshaw, W. E., Hermitage .....	Barred Rocks .....	16	16

\* Not in accordance with standard.

**Bagot's Executor and Trustee Coy., Ltd.****22, KING WILLIAM STREET, ADELAIDE.**

## CAPITAL:

AUTHORISED ... £250,000 | SUBSCRIBED ... £50,000  
 TRUST FUNDS ADMINISTERED (30/9/1920) ... £328,000.

**TO THOSE WHO HAVE OR ARE ABOUT TO  
MAKE THEIR WILLS.****A STRIKING INSTANCE OF THE RISK OF APPOINTING PRIVATE EXECUTORS.**

"The death of James Gordon Bennett, the wealthy owner of the New York HERALD, took place not very long ago. Mr. Bennett appointed his personal friend, James Stillman, an executor. Mr. Stillman died before any progress had been made in settling the Bennett Estate.

He had appointed John W. Sterling, the famous New York lawyer, an executor of his estate. Before Sterling could begin work he died suddenly while fishing in Canada. Sterling appointed James O. Bloss, the New York banker, executor of his estate. But within a few weeks the third death in the chain occurred. The estates of Bennett, Stillman, and Sterling aggregated about 75,000,000dols. (say £15,000,000 sterling).

"Old Colony News Letter."

"From our standpoint the principal lesson is this:—The long interlocking complications that arise after a man's death, during which the families are left to shift the best they may while the tedious grind of untangling his affairs drags through the Probate Court, gives irresistible force to the argument for A TRUSTEE COMPANY AS YOUR EXECUTOR, AN EXECUTOR WHO NEVER DIES OR IS SICK, AND IS FOREVER 'ON THE JOB.'"

"Old Colony News Letter."

SEND FOR FREE BOOKLET.

## RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of April, 1921, also the average precipitation to the end of April, and the average annual rainfall.

station.	For April, 1921.	To end April, 1921.	Av'ge. to end April.	Av'ge. Annual Rainfall
FAR NORTH AND UPPER NORTH.				
Kodnaddatta .....	—	2.48	2.04	4.73
Karree .....	—	1.90	1.88	6.02
Karina .....	—	2.11	2.15	6.57
Kopley .....	—	3.20	2.49	8.30
Keltana .....	0.30	4.17	2.73	8.93
Kiamman .....	0.67	5.44	3.44	12.52
Karoala .....	0.05	9.05	1.90	7.33
Kookina .....	1.68	10.53	2.30	12.65
Kawker .....	1.65	11.46	2.57	12.37
Kilson .....	1.65	10.93	2.58	11.85
Kordon .....	2.24	14.81	2.39	10.43
Koom .....	2.00	14.68	2.75	13.79
Port Augusta .....	1.94	13.19	2.49	9.42
Port Augusta West .....	1.95	12.39	2.17	9.36
Kruce .....	1.88	12.77	2.17	9.99
Kiamond .....	1.79	13.06	2.75	11.36
Kilmington .....	2.63	16.59	3.56	18.06
Killorie .....	1.56	9.67	2.54	11.82
Kelrose .....	1.40	17.39	4.79	23.11
Kooleroo Centre .....	1.03	10.98	3.22	15.51
Port Germein .....	0.85	11.06	2.97	12.65
Kirra .....	0.80	12.30	3.77	19.44
Kippa .....	0.45	8.26	2.81	14.90
Kindook .....	2.08	12.58	2.43	10.82
Karrieton .....	1.08	12.65	2.66	12.34
Kolnburg .....	1.30	13.53	2.20	10.22
Kurelia .....	1.14	10.13	2.90	13.11
Korroo .....	0.86	13.36	3.23	13.42
Kackara .....	0.75	11.34	2.68	10.63
Black Rock .....	0.86	12.53	2.94	12.29
Koolta .....	0.34	7.88	2.55	11.65
Keterborough .....	0.40	7.85	3.18	13.82
Kongala .....	0.45	8.01	3.09	14.13
LOWER NORTH-EAST.				
Kunta .....	0.41	8.94	2.42	8.40
Kaukaringa .....	1.10	7.37	2.15	8.15
Kannahill .....	0.50	12.47	2.37	8.51
Kockburn .....	1.30	6.67	2.33	8.03
Kroken Hill, N.S.W. .....	1.96	7.31	2.81	9.89
LOWER NORTH.				
Port Pirie .....	0.85	9.21	3.10	13.26
Port Broughton .....	0.05	6.41	3.07	14.13
Kate .....	0.14	5.51	3.14	15.55
Kura .....	0.68	8.77	3.68	18.12
Kiltowie .....	0.51	9.12	3.51	17.02
Kamestown .....	0.36	8.14	3.44	17.56
Kandaleer W. Wks. .....	0.27	5.86	3.04	17.56
Kladstone .....	0.42	8.02	3.33	16.05
Krystal Brook .....	0.44	8.69	3.24	15.82
Keorpetown .....	0.08	6.12	3.79	18.30
Kariddy .....	0.30	5.79	3.41	16.43
Kedhill .....	0.17	6.87	3.33	16.66
LOWER NORTH—continued.				
Spalding .....	0.05	5.60	3.23	20.18
Gulnare .....	0.17	5.76	3.04	18.97
Yacka .....	0.20	5.12	2.98	15.27
Koolunga .....	0.16	6.04	3.19	15.73
Snowtown .....	0.14	7.05	3.17	15.87
Brinkworth .....	0.06	4.90	2.83	15.91
Blyth .....	0.07	5.29	3.47	16.55
Clare .....	0.26	5.90	4.74	24.47
Mintaro .....	0.18	5.52	3.90	23.07
Watervale .....	0.38	5.64	5.22	27.48
Auburn .....	0.30	7.44	4.87	17.82
Hoyleton .....	0.10	4.70	3.75	15.82
Balaklava .....	0.16	4.87	3.55	13.14
Port Wakefield .....	0.08	6.71	3.38	13.64
Terowie .....	0.12	8.01	3.11	13.97
Yarcowie .....	0.09	7.88	3.21	13.54
Hallett .....	—	5.88	3.18	16.28
Mount Bryan .....	0.04	6.14	2.91	16.38
Burra .....	0.05	5.46	3.64	17.91
Farrell's Flat .....	0.06	4.66	3.69	18.87
WEST OF MURRAY RANGE.				
Manoora .....	0.18	5.69	3.48	18.54
Saddleworth .....	0.20	5.75	4.17	19.75
Marrabel .....	0.18	6.82	3.86	19.44
Riverton .....	0.16	5.37	4.31	20.74
Tarlee .....	0.22	4.86	3.89	17.86
Stockport .....	0.28	6.94	3.51	16.36
Hamley Bridge .....	0.18	6.50	3.67	16.82
Kapunda .....	0.38	6.25	4.24	19.85
Freeling .....	0.22	4.86	3.84	17.95
Greenock .....	0.28	6.22	4.26	21.73
Truro .....	0.17	8.93	4.00	20.18
Stockwell .....	0.20	7.18	4.07	20.40
Nuriootpa .....	0.25	6.57	4.09	21.09
Angaston .....	0.20	6.88	4.31	22.54
Tanunda .....	0.18	5.32	4.46	22.33
Lyndoch .....	0.43	5.64	4.17	22.81
Williamstown .....	0.42	5.61	4.85	27.74
ADELAIDE PLAINS.				
Mallala .....	0.20	4.49	3.60	16.81
Roseworthy .....	0.32	3.92	3.73	17.37
Gawler .....	0.32	4.80	3.67	19.14
Two Wells .....	0.22	3.24	3.52	15.91
Virginia .....	0.28	3.86	3.73	17.11
Smithfield .....	0.41	3.65	3.42	17.33
Salisbury .....	0.32	3.61	4.09	18.52
North Adelaide .....	0.44	4.96	4.18	21.87
Adelaide .....	0.45	4.24	4.29	21.01
Glenelg .....	0.33	3.50	3.77	18.42
Brighton .....	0.47	4.98	4.09	21.03
Mitcham .....	0.60	4.63	4.52	23.68
Glen Osmond .....	0.72	3.99	4.91	25.73
Magill .....	0.49	4.02	4.97	25.38



## RAINFALL—continued.

Station.	For April, 1921.	To end April, 1921.	Av'ge. to end April.	Av'ge. Annual Rainfall	Station.	For April, 1921.	To end April, 1921.	Av'ge. to end April.	Av'ge. Annual Rainfall
MOUNT LOFTY RANGES.					WEST OF SPENCER'S GULF—continued.				
Teatree Gully.....	0.55	4.43	5.24	27.73	Port Lincoln.....	0.18	2.04	3.44	19.83
Stirling West.....	1.99	7.53	8.28	46.82	Tumby.....	0.39	2.76	2.55	14.76
Uraidla.....	1.36	6.64	7.81	44.49	Carrow.....	1.04	4.95	2.66	15.14
Clarendon.....	1.34	7.16	6.49	33.18	Arno Bay.....	1.98	5.72	2.66	13.14
Morphett Vale.....	0.59	4.86	4.66	22.90	Cleve.....	1.36	9.07	—	11.56
Noarlunga.....	0.53	4.69	4.06	20.21	Cowell.....	1.36	7.72	3.02	11.94
Willunga.....	0.65	5.19	4.77	25.82	Point Lowly.....	0.82	10.16	2.76	—
Aldinga.....	0.36	3.98	3.95	20.22					
Myponga.....	0.93	6.00	—	—	YORKE PENINSULA.				
Normanville.....	0.41	5.35	3.86	20.53	Walleroo.....	0.26	7.11	3.14	14.11
Yankalilla.....	0.70	5.61	4.37	22.93	Kadina.....	0.34	7.70	3.39	15.53
Mount Pleasant.....	0.69	7.96	4.82	27.01	Moonta.....	0.31	6.47	3.45	15.53
Birdwood.....	0.61	6.84	5.13	29.43	Green's Plains.....	0.34	5.54	3.03	15.53
Gumeracha.....	0.86	6.90	5.78	33.33	Maitland.....	0.67	5.29	3.87	20.20
Millbrook Revr.....	0.94	6.22	—	—	Androssan.....	1.10	7.02	2.91	13.96
Tweedvale.....	0.91	7.09	5.81	35.60	Port Victoria.....	0.34	4.91	3.05	15.24
Woodside.....	0.88	7.07	5.33	32.05	Curramulka.....	0.27	3.68	3.44	18.31
Ambleside.....	1.10	8.00	5.87	34.81	Minlaton.....	0.31	5.11	3.31	17.70
Nairne.....	1.02	6.61	5.39	28.58	Brentwood.....	0.12	4.36	2.86	15.44
Mount Barker.....	1.22	7.37	5.60	31.10	Stansbury.....	0.39	4.29	3.26	17.98
Echunga.....	1.23	6.44	6.05	32.94	Warooka.....	0.14	4.17	3.03	17.74
Macclesfield.....	1.15	6.13	5.66	30.60	Yorketown.....	0.14	4.19	3.10	17.29
Meadows.....	1.42	6.01	6.69	36.26	Edithburgh.....	0.22	4.28	3.30	16.83
Strathalbyn.....	0.63	4.96	3.94	19.28					
MURRAY FLATS AND VALLEY.					SOUTH AND SOUTH-EAST.				
Meningie.....	0.54	3.42	3.71	18.77	Cape Borda.....	1.03	1.95	4.04	24.46
Milang.....	0.25	3.41	3.43	15.56	Kingscote.....	0.27	2.41	3.26	18.92
Langhorne's Bdge.....	0.44	5.17	3.22	14.59	Penneshaw.....	0.60	3.01	3.50	21.29
Wellington.....	0.71	5.38	3.46	14.82	Victor Harbor.....	0.39	4.33	4.23	21.56
Tailem Bend.....	0.33	5.58	3.01	24.55	Port Elliot.....	0.42	4.03	4.09	20.90
Murray Bridge.....	0.22	6.46	3.32	13.98	Goolwa.....	0.14	6.32	3.87	17.87
Callington.....	0.56	3.75	3.39	15.45	Karoonda.....	—	5.97	—	—
Mannum.....	0.13	5.98	2.93	11.51	Mindarie.....	0.07	3.62	—	—
Palmer.....	0.19	5.97	2.98	15.23	Meribah.....	0.36	2.73	—	—
Sedan.....	—	6.76	2.73	12.07	Pinnaroo.....	0.34	9.29	3.09	15.67
Swan Reach.....	—	7.63	2.37	10.80	Parilla.....	0.28	4.15	2.51	14.02
Blanchetown.....	—	4.46	2.66	10.26	Lameroo.....	0.37	4.33	3.16	16.45
Endunda.....	0.13	7.08	3.66	17.51	Parrakie.....	0.31	4.43	2.40	14.42
Sutherlands.....	—	4.95	3.08	10.90	Geranium.....	0.33	3.79	2.95	16.24
Morgan.....	—	5.76	2.14	9.13	Peake.....	0.42	4.14	3.15	16.25
Walkerie.....	—	6.91	2.28	9.41	Cooke's Plains.....	0.72	5.41	3.15	15.00
Overland Corner.....	—	5.29	2.86	11.11	Coomandook.....	0.51	6.01	3.06	17.75
Loxton.....	0.09	4.74	2.99	12.27	Coonalpyn.....	0.35	3.03	3.53	17.64
Renmark.....	—	6.30	2.66	10.92	Tintinara.....	0.31	3.27	3.59	18.83
WEST OF SPENCER'S GULF.					Keith.....	0.35	4.76	3.25	18.64
Eucla.....	0.30	0.65	3.20	10.03	Bordertown.....	0.51	3.33	3.88	19.32
White Well.....	0.91	1.02	2.07	9.24	Wolseley.....	0.42	3.73	3.55	19.07
Fowler's Bay.....	0.57	1.90	2.26	12.11	Frances.....	0.20	3.09	3.71	20.10
Penong.....	1.34	3.78	2.39	12.26	Naracoorte.....	0.74	4.79	4.32	22.63
Murat Bay.....	1.03	3.88	1.62	10.47	Penola.....	0.70	3.20	5.07	26.48
Smoky Bay.....	0.19	3.27	1.70	10.37	Lucindale.....	0.98	3.60	4.15	22.93
Petina.....	0.44	3.84	1.91	12.97	Kingston.....	0.50	3.21	4.33	24.51
Streaky Bay.....	0.12	3.89	2.56	15.09	Robe.....	0.95	2.47	4.33	24.66
Talia.....	0.27	4.17	1.84	15.35	Beachport.....	0.51	2.38	5.02	27.29
Port Elliot.....	1.31	2.57	2.46	16.37	Millicent.....	0.89	3.40	5.70	29.29
Cummins.....	0.31	2.77	—	—	Kalangadoo.....	1.16	4.33	—	—
					Mount Gambier.....	0.85	3.19	6.39	31.56

## AGRICULTURAL BUREAU REPORTS.

## INDEX TO CURRENT ISSUE AND DATES OF MEETINGS.

Branch.	Report on Page	Dates of Meetings.		Branch.	Report on Page	Dates of Meetings.	
		May.	June.			May.	June.
Alawoona .....	•	—	—	Frances .....	889	28	26
Aldinga .....	•	21	18	Freeling .....	•	—	—
Amyton .....	•	—	—	Gawler River .....	•	23	20
Angaston .....	•	—	—	Georgetown .....	•	21	18
Appila-Yarrowie .....	•	—	—	Geranium .....	•	28	26
Artherton .....	876-7	—	—	Gladstone .....	•	22	18
Ashbourne .....	•	23	20	Glencoe .....	•	—	—
Balaklava .....	•	14	11	Glossop .....	•	—	—
Barmera .....	886	—	—	Goode .....	•	25	22
Beetaloo Valley .....	889	18	15	Green Patch .....	†	16	—
Belalie North .....	•	21	18	Gumeracha .....	•	13	—
Berri .....	882	26	22	Halidon .....	•	—	—
Big Swamp .....	•	—	—	Hartley .....	•	18	15
Blackheath .....	•	21	18	Hawker .....	•	24	21
Black Springs .....	•	—	—	Hilltown .....	•	—	—
Blackwood .....	889	16	20	Hookina .....	867	19	16
Blyth .....	873	21	18	Inman Valley .....	•	—	—
Booleroo Centre .....	•	20	17	Ironbank .....	889	21	18
Borrika .....	•	—	—	Julia .....	•	—	—
Bowhill .....	•	—	—	Kadina .....	•	—	—
Brentwood .....	•	19	16	Kalangadoo .....	889	14	11
Brinkley .....	882	21	18	Kanmantoo .....	•	21	18
Bundaleer Springs .....	•	—	—	Keith .....	889	—	—
Burra .....	•	—	—	Ki Ki .....	886	—	—
Bute .....	•	17	14	Kilkerran .....	877	19	16
Butler .....	•	23	20	Kimba .....	•	—	—
Caltowie .....	•	—	—	Kingscote .....	•	—	—
Canowie Belt .....	•	—	—	Kingston-on-Murray .....	•	—	—
Carrow .....	•	19	16	Kongorong .....	•	19	16
Cherry Gardens .....	887	17	14	Koonibba .....	•	10	16
Clanfield .....	•	—	—	Koppio .....	878	16	20
Clare .....	•	3	7	Kybybolite .....	•	19	16
Clarendon .....	•	16	20	Lake Wangary .....	881	21	18
Claypan Bore .....	•	26	22	Lameroo .....	882-6	—	—
Cleve .....	881	16	15	Laura .....	871	20	17
Collie .....	•	—	—	Leighton .....	•	—	—
Colton .....	•	—	—	Lenswood and Forest Range .....	887	14	11
Coomandook .....	886	27	24	Lone Gum .....	†	18	15
Coonalpyne .....	•	—	—	Lone Pine .....	873	—	—
Coonawarra .....	•	—	—	Longwood .....	888	—	—
Coorabie .....	•	—	—	Loxton .....	•	—	—
Cradock .....	•	—	—	Lucindale .....	•	—	—
Crystal Brook .....	•	21	18	Lyndoch .....	•	19	16
Cummins .....	•	21	18	Macmillivray .....	888	18	15
Cygnat River .....	•	19	16	McLachlan .....	879-81	7	4
Dawson .....	•	—	—	Maitland .....	877	7	4
Denial Bay .....	•	—	—	Mallala .....	874	2	6
Dowlingville .....	†	—	—	Mangalo .....	•	—	—
Edillilie .....	•	28	25	Meadows .....	889	18	15
Elbow Hill .....	878	28	25	Meningie .....	•	—	—
Eurelia .....	•	—	—				

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Milang .....	†	14	11	Renmark .....	887	20	16
Millicent .....	*	7	4	Riverton .....	*	—	—
Miltalie .....	881	21	18	Riverton (Women's) ..	*	—	—
Mindarie .....	*	2	6	Roberts and Verran ..	881	16	20
Minlaton .....	*	20	17	Rosedale .....	875	—	—
Minnipa .....	*	—	—	Rosy Pine .....	884	25	—
Mintaro .....	*	21	18	Saddleworth .....	†	—	—
Monarto South .....	*	—	—	Saddleworth (Women's)	*	—	—
Moonta .....	*	20	17	Salisbury .....	876	3	7
Moorak .....	*	—	—	Salt Creek .....	*	—	—
Moorlands .....	*	—	—	Sandalwood .....	*	—	—
Moorook .....	886	—	—	Sherlock .....	*	—	—
Morchard .....	867	21	18	Shoal Bay .....	*	—	—
Morgan .....	*	—	—	Smoky Bay .....	881	21	18
Morphett Vale .....	889	19	16	Spalding .....	*	—	—
Mount Barker .....	889	18	15	Stockport .....	*	—	—
Mount Bryan .....	*	—	—	Strathalbyn .....	*	17	14
Mount Byran East ..	*	—	—	Talia .....	†	9	13
Mount Compass .....	*	—	—	Tantanoola .....	†	21	18
Mount Gambier .....	*	14	11	Taplan .....	885	—	25
Mount Hope .....	879	21	18	Tareowie .....	868	17	14
Mount Pleasant .....	†	—	—	Tatiara .....	*	21	—
Mount Remarkable ..	*	—	—	Two Wells .....	876	—	—
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Murray Bridge .....	*	—	—	Waikerie .....	*	—	—
Mypolonga .....	882	18	15	Wall .....	*	—	—
Myponga .....	*	—	—	Wanbi .....	*	—	—
Nantawarra .....	*	19	—	Warcovie .....	*	—	—
Naracoorte .....	*	14	11	Warrow .....	*	—	—
Narridy .....	872	14	11	Watervale .....	*	—	—
Narrung .....	*	21	18	Wepowie .....	*	21	18
Netherton .....	887	—	—	Whyte-Yarcowie .....	873	—	—
North Booborowie ..	873	—	—	Wilkawatt .....	886	21	18
North Bundaleer .....	*	—	—	Williamstown .....	876	4	1
Northfield .....	*	11	—	(Women's)	—	—	—
Nunkeri and Yurgo ..	*	1	5	Williamstown .....	876	—	—
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Orroroo .....	869	—	—	Wilmington .....	*	18	15
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Pompoota .....	*	—	—	Yaninee .....	*	—	—
Port Broughton .....	*	20	—	Yeelanna .....	†	21	1
Port Elliot .....	889	21	18	Yongala Vale .....	*	20	—
Port Germein .....	*	21	18	Yorketown .....	*	—	—
Port Pirie .....	*	—	—	Youghusband .....	*	19	23
Ramco .....	†	16	20				

\* No report received during the month of April.

† Formal report only received.

‡ Held over until next month.

## THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the department for fuller particulars concerning the work of this institution.

### REPORTS OF BUREAU MEETINGS.

#### UPPER-NORTH DISTRICT.

(PETERBOROUGH AND NORTHWARD.)

HOOKINA (Average annual rainfall, 12in.).

March 24th.—Present: 11 members and visitors.

RABBIT DESTRUCTION.—Mr. F. Gagney, who contributed a short paper dealing with this subject, considered the month of March about the best time of the year in which farmers should make united efforts to destroy rabbits. Phosphorous mixed with bran and pollard was considered by the speaker to be the best preparation to use for making baits. In the discussion that followed, Mr. S. Scriven explained the use of the smoke fumigator, and stated that it was his intention to use one during the season. Mr. J. Murphy favored the practice of using poison water in the summer and phosphorous baits in the winter. Mr. J. Barnes stated that he had obtained good results from the use of the fumigator in the winter and poisoned baits during the summer. Mr. B. Murphy preferred to mix the baits with the stick phosphorous, because one could be more certain that not any of the poison remained undissolved.

HOOKINA (Annual average rainfall, 12in.).

April 21st.—Present: 11 members and visitors.

DESTRUCTION OF GALAHS.—Mr. G. Heneschke, in introducing a discussion on this subject, said galahs at the present time were proving very destructive in that district, both in the field and in the garden. They pulled up many of the young plants, and knocked down and ate the ripe wheat. He has destroyed a number of birds by treating wheat with strychnine and sugar. Mr. F. Gagney said that during the past two or three years the galahs had increased very rapidly, and if the farmers wished to keep them in check, they should organise and set aside a time when united efforts could be made for their destruction. Mr. Murphy also spoke of the success he had obtained in destroying the birds with wheat that had been soaked in strychnine. He pointed out that quite a number of foxes had been killed through eating the poisoned birds.

MORCHARD (Average annual rainfall, 13.50in.).

February 19th.—Present: nine members.

Mr. F. J. Davill read a short paper, "Harvesting Operations," and an interesting discussion followed.

At a further meeting held on March 19th several questions were submitted for discussion:—1. "What is the best variety of wheat for this district?" Members were unanimously of the opinion that Federation was not to be equalled for the conditions of that district. 2. "In pickling wheat, is it best to treat the seed some weeks before sowing, or to sow immediately after pickling?" The consensus of opinion was that the chief point was to see that the seed was thoroughly dry before it was put into the soil. 3. "What is the best method of pickling?" Members discussed the various machines that were placed on the market for treating the seed, but it was generally thought that the practice of turning thoroughly

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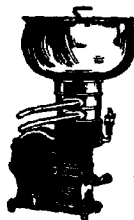
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## LAURA.

March 18th.—Present: 10 members.

**STRIPPER VERSUS REAPER THRESHER.**—The meeting took the form of a debate on the relative merits of the stripper and reaper thresher. Mr. F. T. Hughes, in supporting the claims of the stripper, said:—“There are a great many advantages in harvesting a crop with the stripper. In the first place you may start stripping three or four days sooner than when using the complete harvester, as the unripe grain will ripen in the chaff, thus avoiding heating of the grain and the production of weevil. You can also strip more crop in the same length of time, and that with less horses. When using the stripper I have often averaged eight acres a day, with three horses and a stripper measuring 5ft. 3in. across the whisksers, and could only do the same amount with a harvester measuring about 5ft. 8in. across the whisksers, using four horses at a yoke, and changing three times a day, having a man to bring them to the paddock and change them while I emptied and oiled the machine. With the use of the stripper all the chaff is saved, which will more than pay for the cleaning, and at the same time all weed and seeds are blown into the chaff, and may be burnt if the chaff is not required. The stripper is also a means of checking the spread of barley, which the harvester greatly increases, as it all goes in the bag with the wheat, whereas, by using the stripper and winnower, the barley is mostly blown into the spout with the heads, and is recleaned and put on one side. The chaff can be saved with the harvester. Quite so, but at a loss of from 10 bags to 20 bags a day (according to the crop) in the number of bags taken off. You will also say there are no heads to thresh if using a harvester, which there certainly will be after the stripper; but I say two men using one large stripper and cleaning the wheat with the ordinary winnower driven by a small engine, could attach the engine to the stripper pulley and thresh the heads, and finish harvesting the same amount of crop as two men with two ordinary harvesters and twice the number of horses. The stripper is much superior to the harvester when reaping crops on hilly country, as it saves all the wheat, while the harvester wastes a great deal, as one side of the winnower is overloaded while the other side is almost idle, with the wheat blowing over wholesale. Another great advantage with the stripper is the few wearing parts, only requiring oiling two or three times a day, whereas you are always oiling the harvester somewhere, always buying fittings, and finally scrapping the machine long before the stripper is half worn out. Mr. J. Knaur-chause put the following case for the reaper thresher:—The reaper thresher is a machine that cuts, threshes, and cleans the wheat ready for market in one operation, and, cutting a width of from 8ft. to 12ft., it is a great labor saver. Two men with a reaper thresher can do the work of about five men with strippers and winnower. It is also a grain saver, cutting the heads of wheat. There is not the spitting out of grain over the comb as with the beater machines, the winnower being so constructed, that with ordinary care very little grain is lost off the sieves even in an uneven crop. The comb of the machine can be so regulated that by cutting the thin patches of wheat lower the sieves can be loaded evenly. There is no side draught, as most of the weight and driving gear is centred around the main driving wheel. Wheat can also be harvested under tougher conditions than with beater machines, as the threshing is more of a rubbing process. The threshing can also be regulated to light or severe threshing. Harvested wheat always weighs heavier than winnowed wheat. Some people seem to think that the cocky chaff is wasted with the harvester, but during the 1920 harvest the majority of harvesters were working with chaff carriers attached. Where the reaper thresher stands out ahead of all other machines is in down and tangled crops and crops infested with thistles and turnip. In 1916 and last harvest it proved itself a great saver of crops. Wheat that it would have been useless to try and harvest with the beater machines, have returned from 20bush. to 30bush. per acre harvested with the reaper thresher, and crops so badly infested with turnips would have had to be burnt if owners had to rely on ordinary machines. The turnip infested grain, given a run through the winnower, produced a good marketable sample. Persons who have worked the new thresher in an even and standing crop never want to go back to the beater machines. In the discussion that followed, Mr. E. G. Blesing, while of the opinion that the stripper was superior to the harvester on hilly country and for lightness of draught and for keeping land clean, said that threshers were excellent in down and tangled crops. Mr. V. Walter preferred the stripper for hilly and sandy country, but was of the opinion that

the harvester was the best machine for plain land. Mr. J. C. Richardson considered that all depended on the size of the holding as to which machine would prove the best. Messrs. E. Peeh and H. R. Lines also took part in the discussion.

#### NARRIDY (Average annual rainfall, 16.79in.).

April 23rd.—Present: 12 members.

**SEEDING OPERATIONS.**—Mr. Cox, who contributed a paper dealing with this subject, said the seed should be pickled early, with a solution of 1lb. of bluestone to 10galls. of water, and the grain allowed to become thoroughly dry before stacking away. He sowed  $2\frac{1}{2}$  acres with one bag of pickled wheat. It was his practice to use super at the rate of one bag to  $2\frac{1}{2}$  acres, and it was a good plan to have all the manure stacked before starting seeding. The cultivator should be in good order, with the shares wide enough to cut all the weeds and work the land well. The drill should be overhauled and put in order, so that no time would be lost during the busy season. The wheels of the drill should be taken off, and all the hard grease cleaned out of the axle grips. One should also see that the springs were strong enough to keep the clutches in their places. The points on the hoes of the drill should not be more than 1½in. longer than the hoe itself. With hoes of that length the seed was covered much better and more evenly distributed. The land should be worked sufficiently deep to cut all the weeds and give sufficient loose soil to cover the seed. For sowing on dry ground, he sowed the seed at a shallow depth and used the cocktail harrow to cover it. That prevented the mice from finding it. If the land was wet enough to germinate the seed, pressure should be placed on the drill so that the seed might be placed right on the bottom. If the weeds had strong roots, it was advisable to work a heavy set of harrows. It was a good plan to carry a notebook, and keep the dates and number of acres sown, with the different kinds of wheat, then at harvest time one would be able to tell which wheat had given the best yield.

#### REDHILL (Average annual rainfall, 16.79in.).

March 29th.—Present: eight members.

**CARE OF HORSES.**—In the course of a paper dealing with this subject, Mr. F. G. Kauschke first made reference to the construction of the stable, which he considered should be erected so as to allow 4ft. 6in. for each horse. He was not in favor of stalls or tying the horses up. With the stalls a horse that was inclined to be "bossy" was able to kick another animal, and if they were tied up they could not get away should the building catch fire. If time and stone was available he thought it best to pave the yard, as that enabled one to work among the horses with more comfort. He had proved the benefit of having a small paddock adjoining the stables with a straw stack in it. If the horses were turned into the paddock after working they would soon learn to rub themselves against the straw. That was better for them than rolling in the dirt, and it saved one a good deal of time in the morning, because the animals were not so hard to groom. He was not in favor of putting the trough in the same yard as the stable. It was a mistake to feed the horses on long hay when they were doing hard work. Chaff should be fed to them. If one so desired, a sheaf or two of long hay could be given to them for the last feed at night. Eight hours was quite a good day's work for any horse to do; and for the feeding times he suggested the following programme:—1½ hours feeding time before work in the morning, 1½ hours for dinner in the winter and 2 hours in summer. Eight horses were enough for one team, but if the animals were exceptionally quiet, and the man was an accomplished teamster, 10 could be worked. The collar should be well fitting, and he believed sore shoulders would be a very rare occurrence if the animals were kept in good condition. If the collar should begin to chafe a bran bag placed against the shoulder would very often give the horse considerable relief. A little waggon grease was very helpful for sore shoulders; it kept the sore soft, and so prevented a scab from forming. If a horse was very susceptible to sore shoulders, it was a good plan to make a solution with wattle bark and bathe the shoulders after the collar had been removed. It hardened the skin, and so assisted in minimising the danger of chaffing. An interesting discussion followed.

**WHYTE-YARCOWIE** (Average annual rainfall, 13.91in.).

April 18th.—Present: eight members.

**DOCKAGE ON BLEACHED WHEAT.**—In a paper dealing with this subject, Mr. J. Walsh claimed that the present system of dockage operated unfairly, both to the agent and the farmer. He quoted an instance where a sample from the same load was submitted by three different agents. In one case the dock was 3d. per bushel, in another 4d., and the third took the wheat at f.a.q. Also, at different centres different treatment was meted out, and there seemed to be no uniformity in the amounts deducted. He pointed out that even though the Wheat Board had decided to remit the dock on bleached wheat, it still meant an increased cost to the farmer. Unless a farmer had delivered a large quantity of wheat, it was not worth worrying about the refund, because that involved a good deal of trouble. The paper was well criticised, members agreeing generally with the speaker.

**WIRABARA** (Average annual rainfall, 18.91in.).

March 19th.—Present: 21 members and visitors.

**SEEDING OPERATIONS.**—Mr. F. G. Borgas, who contributed a paper dealing with this subject, said all implements should be repaired and overhauled prior to the commencement of seeding operations. He was not in favor of working the cultivator at a greater depth than from 2in. to 2½in. in front of the drill. The seed should be sown just deep enough to be nicely covered with soil. If the ground was very uneven or lumpy he suggested running the harrows over the fallow. If the best results were to be obtained the grain should be pickled and cleaned or graded before being sown. If the grain was sown early he recommended sowing 1bush. of wheat and lewt. of super to the acre, but if seeding was left until later on in the season one should sow more thickly. If the wheat was sown when the land was dry there was a possibility of a number of weeds coming up with the wheat, and should that happen it would be a good plan to run the harrows over the crop. The wheat would benefit, and many of the weeds would be killed.

**YACKA.**

March 22nd.—Present: 20 members.

**DESTRUCTION OF WEEDS.**—An interesting discussion took place on the question of clearing the fallows of such plants as stinkwort, "Paddy melons," and potato weed. Mr. A. G. Fuller recommended cultivation with the disc cultivator and harrows. The Hon. Secretary (Mr. A. D. Barman) reported having been able to clear the fallows of melons with heavy stump-jump harrows, and then harrowing a fortnight later to break up the dried melon vines. In the case of stinkwort, he always used the disc cultivator, which was a pronounced success. Members were generally agreed that the ordinary tine cultivator was useless to deal with summer growth, the best practice being to work the land lightly with the disc cultivator, sufficiently deep to cut the weeds, and harrow a week or two later to break them up after they were dry.

**BLYTH, March 26th.**—Mr. Jas. Drennan contributed a paper, "Co-operation Amongst Farmers". At a further meeting held on April 19th, addresses were delivered by the Director of Agriculture (Professor Arthur J. Perkins) and the Acting Secretary of the Advisory Board (Mr. H. J. Finnis) to a large gathering of members and visitors.

**NORTH BOOBOROWIE, March 21st.**—Mr. I. J. Warnes read a paper, "Hand Feeding of Sheep", and an interesting discussion followed.

**LOWER-NORTH DISTRICT.****(ADELAIDE TO FARRELL'S FLAT.)****LONE PINE.**

April 19th.—Present: 21 members and visitors.

**PREPARATIONS FOR SEEDING.**—Mr. A. T. Lehmann, who read a paper dealing with this subject, said the fallow should be well cleaned of all rubbish and weeds, and where there were large clods of earth the land should be rolled to enable the




drill to cast the seed more evenly. For the destruction of weeds he preferred the harrows, but stinkwort should first be cut, and then harrowed. All implements should be well set and sharpened and in perfect working order. The harness should be well oiled, and the collars well stuffed to prevent sore shoulders on horses. It was not fair to bring the horses straight out of a stubble paddock, and expect them to do good work. They should be well fed and well stabled. Where there was a horse works in use, there should always be plenty of chaff on hand. Seed wheat should be well selected and graded, and all varieties liable to smut should be pickled. Oats, rye, and other cereals should be well graded and of a sound quality. All manures should be on hand, and kept in a dry place, to prevent trouble and waste of time with the drill. A profitable discussion followed, in which Messrs. Schrapel, Ellis, Basedow, Fromm, Hoffman, and Minge took part.

MALLALA (Average annual rainfall, 16.88in.).

April 11th.—Present: 21 members and eight visitors.

FARM COMFORTS.—Mr. J. C. Catt, who contributed a paper dealing with this subject, said he intended to deal with the subject under four headings—water, fences, house, and stables, stockyards, and implement sheds. Referring to the first point, the speaker said if water was not laid on to the farm, and no permanent supply convenient, bores or wells should be provided. If possible, the water should be fresh and easily accessible from all parts of the holding. By insuring a good water supply one would be able to lay out a lucerne plot, and during the summer months the fodder would act as a grand tonic for the livestock. Fencing.—If one was not able to erect permanent fences when the land was taken up, it was a good plan to endeavour to make arrangements with neighbours to have the division



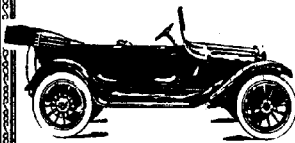
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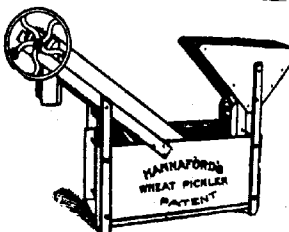
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fences constructed on the same lines. In any case, good posts should be erected, and for great cattle a barb on the top of the post, until more wires were run through the posts, would serve to keep the stock in the paddocks. In the case of sheep, it would, of course, be necessary to supply a few more wires. Where a farm contained several paddocks he believed it would be a good plan if the gates were painted different colors, or each given a separate number, so that servants or strangers could easily be directed to any particular paddock. When erecting or repairing fences the farmer should make a practice of carrying a receptacle of some description, into which any old pieces of plain or barb wire could be removed from the land. It was a bad practice to leave pieces of wire lying about, for there was always the possibility of doing injury to the stock and implements, and if one used a motor car to travel about the farm, one would almost be certain to have tyre troubles. The House.—The idea one should have in mind when first building the farmhouse was that it should be so constructed that additions could easily be made, if so desired, at some later date. If possible, one should make arrangements to have the verandah on all sides of the house. A bath was one of the greatest comforts of farm life, and if water was available that necessity should not be overlooked. A few vines planted at the back of the house, and trained over a trellis, would, in addition to providing shelter, afford the homestead with a nice supply of fresh fruit during the hot weather. A few trees planted around the home would serve as a breakwind, and considerably add to the appearance of the homestead. Stables, &c.—The speaker considered that one of the greatest comforts and advantages in a well-ordered stable was a supply of water laid on to the horses, so that it would be available to them at all times. The erection of a large loose box for sick stock was also a wise provision. The implement sheds should be conveniently situated to the barn, and the motto of the blacksmith shop should be, "A place for everything, and everything in its place." The paper concluded with a plea that farmers should not overlook the comfort of the stock in the paddocks. By planting suitable trees, shade would be provided for the stock during the hot and cold weather, and the value of the holding would be considerably enhanced.

During the afternoon a cricket match was played between a team from the Two Wells Branch and a team selected from the members of the local Bureau. The visitors proved the victors.

#### ROSEDALE.

March 23rd.—Present: 14 members and three visitors.

FARMING IN MALLEE COUNTRY.—In the course of a paper dealing with this subject, Mr. P. F. Nielsen said the first work in connection with the preparation of a scrub block was the knocking down of the mallee. The work could be performed either by logging or mullenising. The logging enabled one to do the work quickly, and required a team of 20 bullocks—10 on each side of the log. The log could be constructed from two pieces of heavy timber—the front piece about 18in. in diameter, and the back one about 24in. in diameter. These should be connected with chains, and placed about 6ft. apart. Where the timber was very heavy it would be necessary to nick some of the trees in order that they would break more readily. If the logging was performed between September and November, one was generally assured of a good burn. Next, it was necessary to prepare a fire break around the rolled portion to prevent the fire from running across into the standing scrub. A windy day should be chosen for the burning, and one should, if possible, make arrangements to have the assistance of neighbors. The fire should be first lighted on the side against the wind. The next job was the picking and heaping up for burning of the sticks that had been missed by the fire. Any stumps that were too high above the ground for the implements to pass over should also be cut down. Mallee land treated in that fashion would not require any manure the first season. After the first crop had been taken off the stubble should be burnt, and if a good fire was obtained many of the shoots would be destroyed. The second season a dressing of 40lbs. of super to the acre should be applied, and the stubble again burnt after harvest. For the third crop he suggested an application of 60lbs. of manure. The land should then be left out for two years, and then cropped every third year. When the land had been cropped for a number of years he advised fallowing the land at a depth of about 2in. to 4in. according to the class of soil. He considered it detrimental to the land to work

it when it was dry. For harvesting he preferred the stripper, because one was able to save the cocky chaff. The chaff could be stored in heaps. He also recommended the conservation of the straw as a standby for the stock in the winter. If a few sheep were kept they would provide the household with fresh mutton, and one could use them to keep the weeds down on the fallow. The best time to cut shoots in the crop was during September, for that gave one an opportunity of getting the crop off, before the shoots had made any strong growth. If possible, an endeavor should be made to log down about 50 acres of scrub each year in order that some of the virgin land would come under crop each season. Where the land was at all inclined to drift the speaker strongly emphasised the necessity for leaving belts of timber.

#### TWO WELLS (Average annual rainfall, 16.36in.).

February 21st.—Present: 12 members.

The following harvest report was received from Mr. W. S. Condon:—King's White, 16bush.; Late Gluyas, 15½bush.; Early Federation (from very little straw), 15bush.; Daphne, 20bush.; Major, 25bush.; Baroota, 21bush.; Golden Return, 15bush.; Walker's Wonder, 13bush. In the discussion the members generally agreed that Gluyas and Baroota were the best all-round wheats to grow.

On March 16th a cricket match was played between a team from the Roseworthy Agricultural College and an eleven from the local Branch of the Bureau. The home side had first use of the wicket, and compiled 118. Following the adjournment for afternoon tea the College team went in to bat. The visitors finally passed the score of the home side with 142 runs to their credit.

#### WILLIAMSTOWN (Women's).

April 6th.—Present: 14 members.

PIE MELONS FOR COWS.—Mrs. J. Wilson read a paper on this subject, in which the following points were brought forward:—The melons acted as a mild aperient for the stock; they helped to prevent attacks of dry bible, and assisted in the production of a good flow of milk. It was stated that the melons did not taint the milk, and that they should be fed in conjunction with other food. One of the members who had used the melons as fodder for dairy cows for some considerable time, advised chopping into small pieces and feeding with bran and chaff.

SALISBURY, April 5th.—A practical veterinary demonstration and lecture, "Ailments of Horses and Cattle," was given by Mr. S. Kneebone, B.V.Sc.

WILLIAMSTOWN, April 22nd.—Papers on the subject "Co-operation" were contributed by Messrs. J. Osborne and E. J. Powell. An interesting discussion followed. Several other questions of local importance were also brought before the meeting.

### YORKE PENINSULA DISTRICT.

(TO BUTE.)

#### ARTHURTON (Average annual rainfall, 16in. to 17in.).

March 19th.—Present: eight members.

The Hon. Secretary (Mr. T. H. Howlett) read a paper "Bulk Handling".

SIDE LINES ON THE FARM.—At a previous meeting of the Branch, a paper on this subject was read by Mr. C. Williams. Referring to pig raising, the speaker said much of the farmer's success depended on the selection of the site for the pigsties. Drainage, convenience of situation, and shelter should each receive consideration. If a block of land at the back of the sties was devoted to the raising of fodder crops the liquid manure could be drained off on to the land. Alongside or at the back of the sties there should be a yard for exercise for the animals. Provision should also be made for an ample supply of fresh water. The floor of the enclosures should be of concrete, with a slope to the drain. Care should be taken to see that the sow did not crush her young ones at farrowing time. The most profitable breed for the farmer was the pure-bred Berkshire. Speaking on the value of cows, he said cleanliness should be the watchword of those engaged in

handling dairy produce. For that district he favored the Shorthorn breed of cattle. The next important point was the conservation of fodder, which he was sorry to say was too often overlooked by the farmer. The conversion of green crops into ensilage was an excellent method of providing fodder for the cattle during the dry months of the year. For that purpose an unused underground tank could be used. The best ensilage was made from pease, wheat, or lucerne, and the crops should be cut with the binder just after the plants had blossomed. A shed for the poultry could be constructed with either wood and iron or wood and rubberoid. The speaker emphasised the point of providing shelter for the birds. For their district he favored birds for egg production. Hardy and vigorous birds from well-known laying strains should be selected from one of the following breeds:—White Leghorn, buff and black Orpingtons, and Rhode Island Reds. As the flocks increased in numbers culling should be undertaken, in order that the birds would not be overcrowded.

#### KILKERRAN.

March 24th.—Present: 11 members.

FODDER CROPS.—“It has been said that rape is a good early feed, but, so far as our district is concerned, it is a failure,” said Mr. T. Geater in a paper under the heading “Sowing for Feed.” He was of the opinion that for early feed Cape barley was a good crop, but, so far as experience was concerned, he thought Algerian oats the best and most profitable. Algerian oats in the green stage did not make a very good fodder for horses, but cattle and sheep were very fond of them. The advantage of oats for fodder crops was that they would be green when most of the other crops had dried off, and, if fed off judiciously, good late feed would be obtained. He suggested drilling without manure, with the disc attachment in the standing stubble, but if the land was encumbered with weeds the stubble should be burnt. An interesting discussion followed, in which members agreed with the views of the speaker.

#### MAITLAND (Average annual rainfall, 20.08in.).

April 9th.—Present: 11 members.

WHEAT GROWING.—“I would fallow as much of my land as possible, and commence ploughing as soon as seeding was finished,” said Mr. J. Bentley, in a paper under the title “Wheat Growing.” Continuing, the speaker said fallowing should be done to a depth of about 3in. or 4in., when the land could be cross-harrowed to encourage the germination of weed seeds. Before the land became too dry an attempt should be made to cultivate the soil and destroy as many weeds as possible. If rain fell after harvest the cultivating implements should again be run over the land. He did not think it necessary to pickle the grain if one was sowing in dry soil. It was his practice to wait for rain before using the drill, because he believed one received a better germination. One to one and a quarter bushels of seeds should be sown to the acre, and it was a good plan to secure a change of seed every second or third year. He had found Federation and Gluyas both good wheats for that district, but with the former one should be careful not to sow the seed on dry land, as it was very susceptible to black rust. Newman’s Early was also a good wheat for that district, both for grain and hay. When the stubble was burnt the fire did a certain amount of good to the land, and one was not bothered with the straw when breaking up the land. An interesting discussion followed.

#### PASKEVILLE.

April 19th.—Present: 14 members.

Mr. S. Ganson contributed a paper, “Docility in Livestock,” and an interesting discussion followed. The report of the delegates to the Kadina Conference was also received and discussed.

ARTHURTON, April 14th.—An application was received from one of the members, expressing his desire to attend the short course for farmers at the Roseworthy Agricultural College. The Hon. Secretary (Mr. T. H. Howlett) reported on the proceedings of the Conference held at Kadina on March 18th. Other items of local interest were also discussed.

PINE FOREST, April 19th.—Among other matters brought before the meeting was the subject, "Stinkwort Destruction." Mr. Harris, who had had a good deal of experience with the weed, found that the best method of combating it was to run the harrows over the fallow as soon as the plants were visible. A short discussion also took place on the best methods of pickling wheat.

### WESTERN DISTRICT.

ELBOW HILL (Average annual rainfall, 11in. to 12in.)

March 26th.—Present: seven members.

TELEPHONE COMMUNICATION ON THE FARM.—In the course of a short paper dealing with this subject, Mr. T. Cowley said every farming district should be connected with its nearest business centre by telephone. He believed if that were done it would play a very important part in the working and general management of the farm. In many cases the wire fence could be used to connect the farms with the telephone. One would prove the value of the telephone during the busy seasons of the year, especially during harvest time, when one found it necessary to obtain without loss of time new parts for the machines. The speaker believed that telephonic communication would add considerably to the social life of the country, and would help in making rural life more attractive. Perhaps the greatest advantage would be in times of sickness or accident, when one could get into quick communication with a medical practitioner. He thought that if the Government were to erect trunk lines to the different agriculture centres, the farmers would erect their own wires. An interesting and lengthy discussion followed.

KOPPIO (Average annual rainfall, 22.40in.).

March 21st.

HOW TO MAKE RURAL LIFE ATTRACTIVE.—The following paper was read by Mr. M. T. Gardner:—To those who make up their minds to settle on land and do pioneering work, it is not too much to assert that they should be given the utmost possible comfort in their homes, and one should aim to provide as many conveniences as possible to expedite the work. To those engaged in domestic and household duties should be given all consideration possible. The matter of expense is a vital factor in building homes, and one has to limit activities to the means available for the work, but such things as water being laid on from the tank to the washhouse, the bathroom, and the kitchen should be within the means of all, besides being easily done without the aid of skilled labor. It is not much trouble in the matter of rain water tanks to build the tankstand high enough to permit water being gravitated where desired. Too often one sees no verandah on a house, for besides keeping the home cool, the verandah protects the walls, doors, and window frames, and makes a home look more attractive as well as more valuable. A small area should be securely and strongly fenced round the home, a garden laid out, and an assortment of fruit trees planted. In a district like ours so much depends on a man's individual efforts for the maintenance and supply of vegetables, fruit, &c., and as these go far in the matter of housekeeping economy, one is almost forced to become a gardener in a lesser or greater degree. In the matter of farm buildings, neatness as well as utility should be considered. Straw sheds can be constructed neatly and well—quite good enough to serve any purpose if a little time and care is taken when building. To greatly enhance the value and appearance of a holding there is nothing that appeals so much as plantations of ornamental and useful timber trees. These should not be planted too near the garden, as they harbor birds during the fruit season. There is a great need for afforestation in Australia, and although we in this locality have a lot of timber, a good deal of it is not much use to us and of no commercial value. It should be the aim of all owners of properties to have their holdings securely and substantially fenced, and there is nothing so annoying, and nothing causes friction between settlers more quickly than trespassing stock. To make the most of a

place, and to save time, which means money during these times of abnormally high wages, it is necessary to expedite the work on the land as much as possible. For this reason one should plan improvements accordingly and cut down the element of drudgery to a minimum. How often for the sake of a few pounds spent on serviceable gates, time and energy is lost in mustering and drafting stock, which often is detrimental to both man and beast. I do not think I go too far in stating that it should be the aim of everyone taking up land as a vocation in life, to demonstrate by actual illustration that country life has many advantages and many opportunities, which, if made use of, make a strong appeal for land settlement, and to encourage rural production, which is so necessary for national and economic welfare. It must be borne in mind that rural occupation often at certain seasons of the year entails hard work and sometimes long hours. I would aim, if possible, at the elimination of long hours where practicable, as I think that causes rural life to be viewed with a feeling of dissatisfaction. To push along while one is working, and to finish the day's work in reasonable time is, in my mind, an ideal scheme. In conclusion, I would add that new times call for new measures, and that as the present calls for progress, and it is essential to go forward with the times, let us then strive to make our holdings more attractive to ourselves, to encourage others to do likewise, and make rural life more attractive.

#### McLACHLAN.

April 9th.—Present: 23 members.

CONSERVATION OF MOISTURE IN THE SOIL.—In the course of a short paper dealing with this subject, Mr. Puckridge said to make good the losses of moisture caused by evaporation, the harrows should be run over the land immediately after a fall of rain. They not only prevented a loss of moisture, but also gave a more even surface to the land, which was a great advantage during harvest time. In the discussion that followed Mr. Hayman said he had obtained the best results by harrowing about a week after the seed had been sown. All members agreed that harrowing assisted in the securing of good crops, but in many cases farmers who had scrub blocks to work could not devote the time to harrowing. In reply to a question from Mr. Roe as to the best depth to sow the seed, Mr. Jericho thought 1 in. about the right depth. Mr. Puckridge was of the opinion that the grain should be sown at a depth of 1½ in. Mr. Dawson asked what quantity of super should be sown on new land. Members, in reply, spoke in favor of various quantities, some 50 lbs., others from 60 lbs. to 90 lbs. The chairman advocated sowing as much super as could be afforded. A member then read a paper, "Popular but Erroneous Opinions of Some Farmers," and a good discussion followed.

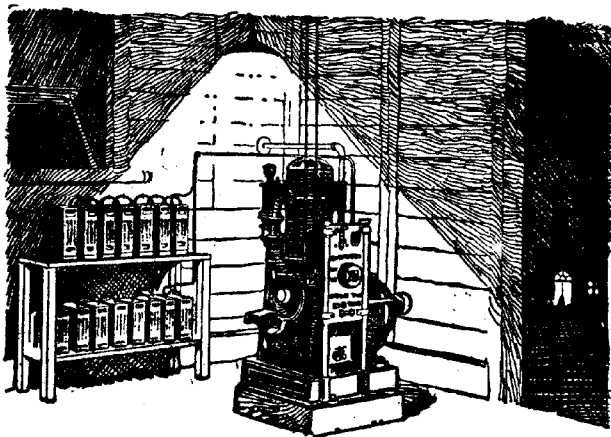
#### MOUNT HOPE.

April 23rd.—Present: eight members.

SEEDING.—"As soon as harvest is cleared up, preparations should be made for the next season's crop," said Mr. H. Doudle, in a paper dealing with this subject. "Before the cold weather commenced, all fire raking and stubble burning should be completed, so that when the first rains came, the cultivating implements could be started. He believed in working the cultivator as soon as possible after the drill, so that in the event of a heavy fall of rain the grain would get an early start, and if that was done there would not be any great danger of injuring the seed bed. Some farmers favored both the cultivator and drill with tines, but these implements, in his opinion, had their disadvantages, chiefly because they were inclined to become choked with rubbish. Wheat or barley should be pickled some time before sowing, to enable it to become thoroughly dry. That was a very important matter, as seed that was pickled 48 hours before sowing was labor and pickle wasted. When pickling, the bags should be pickled as well as the seed, otherwise the spores of smut would be left in the bag, and the grain become affected again. One per cent. solution of bluestone was the right strength for wheat, but he favored pickling barley at about double that strength. Oats he always sowed unpickled, at the rate of 1½ bush. per acre for grain, and 1½ bush. for hay; barley about the same; and wheat at 1 bush. per acre."

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## ROBERTS AND VERRAN.

April 18th.—Present: nine members and visitors.

**PREPARATION FOR DRY SEASONS.**—In a short paper dealing with this subject, Mr. M. Masters said farmers could not get away from the fact that in the course of time they would be sure to experience lean years, and in order to tide over those periods reserve stocks of fodder should be kept on hand. In that district the speaker thought it would be a great advantage to grow oats. They made an excellent hay and cereal crop, and helped one to combat the take-all disease. If the farmer was to sow 50 acres of oats more than his actual requirements, he would be able to cut that area for hay, and keep it as a reserve stack. If the farmer did not think he could handle all the oats at hay time, the speaker suggested cutting the crop when it was just out in ear, chaffing it up, and making it into ensilage. A pit could be dug at the side of the chaffcutting elevator, and with the aid of a sheet of iron the chaffed green feed could be run into the pit. The ensilage could be mixed with the hay chaff, or fed to the stock by itself, and in the summer time it would be a very valuable form of fodder. All the cocky chaff should be saved, and if properly heaped and covered it would last for a number of years. An interesting discussion followed, in which members agreed with the views of the writer. It was pointed out that a stack of good clean straw would also prove a valuable asset during dry years.

## YADNARIE (Average annual rainfall, 14.09in.).

March 23rd.—Present: seven members and visitors.

Mr. A. Jericho read a short paper, in which he outlined some of the essential points that should be considered by the man intending to take up a scrub block. In the discussion that followed, Mr. F. W. Jericho thought it would be a good plan for the Bureaux to draw up a list of the items required, and have them printed for the benefit of prospective settlers in new areas. Mr. Forbes said the growth of black mallee on a block usually indicated a good rainfall. Forethought was also necessary regarding the subdivision of the block. Mr. J. H. Kruger said consideration should be given when selecting the land as to the position regarding the railway and water supplies. The site for the homestead should be laid out on rising ground.

CLEVE, March 30th.—Matters relating to the local Field Trial Society were discussed. Several other items of local interest were also brought before the meeting.

LAKE WANGARY, April 16th.—Mr. T. P. Morgan contributed a paper, "Coast Disease in Sheep." The paper brought forth a good discussion, the majority of members being of the opinion that the best method of dealing with the disease was the changing of pastures. A discussion was also raised on the subject of asking for a branch railway, to serve the districts of Wangary and Warrow.

MCLACHLAN, March 12th.—Mr. W. E. Hawke read a paper, "Popular Beliefs of Farmers". The points brought forward in the paper were the advisability of using liberal dressings of super, and the benefits to be derived from sowing clean seed. An interesting discussion followed.

MILTAIRIE, March 26th.—The report of the delegates to the Franklin Harbor District Conference was received and discussed. A fine sample of up-to-date potatoes grown without irrigation was exhibited. The fact that the Bathurst burr was spreading in the district was brought under the notice of the meeting, and it was decided to ask the district council to enforce the Act dealing with the destruction of noxious weeds.

SMOKY BAY, March 19th.—Mr. G. Lovelock read a paper "Rotation of Crops", and an interesting discussion followed. The Hon. Secretary (Mr. J. W. Blumson) read an article, "Wheats of Australia".

WUDINNA, April 16th.—Several subjects of local interest, including the appointment of a veterinary surgeon for Eyre Peninsula, were brought before the meeting for discussion.



**YADNARIE, March 31st.**—The Superintendent of Experimental Works (Mr. W. J. Spafford) visited the Branch and inspected the district with a view to establishing experimental plots. In the evening Mr. Spafford delivered a lecture on the subject "Take-all" to a large number of delegates and visitors.

### EASTERN DISTRICT. (EAST OF MOUNT LOFTY RANGES).

#### BERRI.

April 18.—Present: 24 members and visitors.

**CUP COMPETITION.**—The judges' report on the cup competition for the best-kept block shows that Mr. A. B. Kurtz becomes the possessor of the cup, having won it for the third time this year, securing 93 points. Mr. W. M. Gillard was second with 89 points, and Messrs. Padman and McGlasson in third place with 88 points each. The judges, in commenting on the work, stated that the standard of cultivation of the present time was higher than at any other period in the history of Berri.

Mr. E. Ray Moss then read a very instructive paper, "Manuring Orchards." It was decided that the annual social would be held during the month of June.

#### BRINKLEY.

March 26th.—Present: 14 members.

**PICKLING WHEAT.**—In the course of a discussion on this subject, Mr. Wilhelm stated that he had treated his seed wheat with formalin, and had received a very clean sample. One pound of formalin to 40 gallons of water was used. Considerable dissatisfaction was expressed by some of the members at the results received when bluestone had been used. Mr. H. D. Humphrey then read a paper, "Time Saving on the Farm," and a good discussion followed.

#### LAMEROO (Average annual rainfall, 16.55in.).

April 2nd.—Present: 12 members and visitors.

**QUESTION BOX.**—The evening was devoted to the discussion of several interesting agricultural topics. Mr. Burns asked the best method of treating land affected with takeall. Members generally were of the opinion that takeall was getting less in the district every year, and that eventually the farmers would not be troubled with the disease. They were still of the opinion, however, that oats should be grown as a preventive, and also that a three-year rotation with wheat was a wise course to adopt. A good stubble burn also helped in minimising the danger of diseased crops. It was mentioned that where oats had been grown for the first crop when the land was cleared, a marked difference could be noticed for a considerable number of years. Mr. Trowbridge asked whether members thought it would pay to buy sheep at the present time to clear the land. The general opinion was that although sheep were very valuable animals on the farm, the present state of the wool and wheat market made it doubtful as to whether it would pay to buy sheep at the present juncture. Mr. Feineler asked if smut would grow on self-sown wheat. Mr. Trowbridge stated that unless the preceding crop had been affected with smut, he did not think that smut would be found on the self-sown crop, although cases had been known where smut had been seen on self-sown crops.

#### MYPOLONGA.

March 23rd.—Present: 14 members and three visitors.

**PROFITABLE METHOD OF WORKING A SWAMP BLOCK.**—The following paper was read by Mr. W. Farnham:—"Past experience has proved that nothing is to be compared with dairying as far as the reclaimed swamps are concerned. I therefore intend to confine my remarks solely to that subject. On an area where the soil is all good and well drained I consider 18 acres sufficient area on which to

make a fair living. I would divide this into three paddocks, one of 12 acres, which could be planted with lucerne. The remaining portion I would divide into two equal-sized paddocks for the purpose of growing oats and barley in the winter and maize and Japanese millet or Sudan grass in the summer. I have tried Sudan grass for the first time this season, and am inclined to think that it will displace millet as a grazing crop for cows, because not only does it grow more quickly than millet, but its life is longer, and the plants are not likely to be pulled up, even if grown on loose peaty soil. The implements required to work a swamp are as follows:—A double-furrow plough, two harrows, mower, rake, seeddrill, and roller; it is also necessary to have a trolley and spring-draw for carting green feed and hay. Two horses will comfortably work a block of the size mentioned; in fact, I work an 11-acre fruit block in addition to my swamp with two horses, and find it no trouble to keep them in the best of condition. Fourteen cows are enough for a block of this size to feed—that is, in addition to the horses, heifers, and bull. If we wish to make the highest returns from the swamps we must have good cows. To buy them at present prices is beyond most of us, therefore our other alternative is to rear them, and to do this we must mate our best cows with a bull whose ancestors have proved themselves to be good milkers. It has been my experience that heifers kept from such cows will nearly always be better than their mothers. My cows are fed on nothing but green feed from September until the beginning of April. I find that equal quantities of maize and lucerne or millet and lucerne fed to cows is the best for producing milk. I have had very poor results from cows fed solely on maize. In the winter I chaff up most of the hay and feed it to the cows while in the bails. If cows are given a feed of chaff, say two kerosine tins full each, in the morning, they can be turned on to the barley without any fear whatever of them becoming blown. To produce good crops it is most necessary to cultivate the land thoroughly before sowing. A good plan is to plough the land as soon as one crop is off, and let it lie in its rough state for a few weeks. If this can be done, the following crop will receive considerable benefit.” The speaker then advised the avoidance of the following mistakes:—“Do not keep more horses than are required to work the block. Do not graze the lucerne. Do not sell the standing crops of lucerne for 30s. or £2 an acre; turn it into milk; you will make four times that amount out of it. Do not buy small pigs to use up the skim milk; rear them yourself, and you will find that your pig profits are a great deal more at the end of the year. Do not cart lucerne hay in very hot weather. I always make a practice not to touch it after midday unless it is a very cool day. Do not feed the cows on lucerne hay in the summer; cut a fresh portion of the crop every day.”

## PINNAROO (Average annual rainfall, 16.74in.).

April 15th.—Present: eight members.

EXPERIMENTAL PLOTS REPORT.—The following report on plots conducted for the purpose of ascertaining the effect of different manurial dressings was received from the Hon. Secretary (Mr. E. H. Parsons):—

Plot No.	1918.		Bushels per Acre.
	Useful Rain. In.	Super. Lbs.	
1 .. .. .	June		
	1.72	15	9.44
2 .. .. .	July		
	0.80	27	13.42
3 .. .. .	Aug.		
	1.92	42	14.13
4 .. .. .	Sept.		
	0.23	69	14.32
5 .. .. .	Oct.		
	1.39	94	14.31
6 .. .. .	Nov.		
	0.11	119	13.64

Total useful rain .. 6.17in.

Yandilla King wheat sown in all plots.

## PINNAROO—EXPERIMENTAL PLOTS REPORT—(continued).

Plot No.	1919.		Super. Lbs.	Bushels per Acre.
	Useful Rain.	In.		
1 .. .. .	June	0.60	18	3.37
2 .. .. .	July	0.69	28	4.11
3 .. .. .	Aug.	0.91	45	4.45
4 .. .. .	Sept.	1.11	55	6.49
5 .. .. .	Oct.	0.48	91	6.55
6 .. .. .	Nov.	0.43	133	6.06
Total useful rain ..		4.22in.		

Yandilla King wheat sown in all plots.

Plot No.	1920.		Super. Lbs.	Bushels per Acre.
	Useful Rain.	In.		
1 .. .. .	June	2.54	24	17.63
2 .. .. .	July	1.20	28	17.16
3 .. .. .	Aug.	3.31	28	16.6
4 .. .. .	Sept.	3.35	45	17.23
5 .. .. .	Oct.	0.94	69	17.23
6 .. .. .	Nov.	—	86	16.83

N.B.—Plots Nos. 1 and 2 were limed with 360lbs. of lime on May 15th, 1920. Correll's wheat sown.

The average results of the only four plots carried out under the same conditions for the three years are as follows:—

56lbs. per acre.	84lbs. per acre.	112lbs. per acre.	168lbs. per acre.
11.38bush. per acre	11.94bush. per acre	12.68bush. per acre	12.56bush. per acre

## ROSY PINE.

March 23rd.—Present: nine members and visitors.

WHITE METAL BEARINGS.—Mr. A. Camens read the following paper:—"White metal, or Babbitt metal, as it is sometimes called, is composed of various combinations of tin, copper, and antimony, and though it is so soft that it can be easily cut with a pocket-knife, it has wonderful wear-resisting qualities. It is used for shafts running at very high speeds, and sustaining great pressures. Moreover, it lends itself readily to the farmer's repair work, and it is to this branch that I propose to confine my remarks. The whole outfit that is required for white metalling is a small ladle, a rasp, a twist drill, and a hacksaw, and some white metal. It pays to have a good quality white metal, as there are better wearing properties in the higher-priced metal, and the same amount of work in running a bearing. The white metal can always be obtained locally, and by its use many parts of machinery can be made as good as new, thus saving a good deal of outlay in cash and in duplicate parts, to say nothing of the saving of time in sending to the town, with the possibility of having to send to Adelaide or some other equally distant place for parts. The worse a bearing is worn the better the job will be when finished, as there will be a larger body of metal to withstand the wear it will be subjected to. My mode of operation is, firstly, to drill a couple

of holes in the casting to allow the metal to run in. These form studs, and keep the metal part of bearing rigid. It is necessary to warm the bearing so that all oil and grease is burnt off. Then place the spindle in the bearing in the position it occupied before any wear took place. Then place stiff damp clay or putty wherever there may be a chance of the white metal running out. Care should be taken that none is placed where the white metal is wanted. Place the ladle with the metal in on the fire. The melting point of white metal is very low, and it will quickly melt. Everything now being ready, the metal can be poured in through the oil hole right up to the spindle. This obviates the necessity of drilling out the oil hole afterwards. If the running is a success, the rough edges can be rubbed off and oil applied to the bearing. It should then be turned on the spindle a few times to make it work smoothly. Place the spindle and bearing on the implement and apply plenty of oil when working. If the running of the bearing is not a success, the metal can be melted and used again, but remember that the metal loses some of its wearing qualities each time it is heated. If the bearing to be run is made in two sections, a piece of tin can be placed in position, thus preventing the two halves from adhering to each other. I have used this white metal for various jobs, such as windmill pitmans, drill, winnower, and engine bearings, and on plough boxes which have worked loose in the wheels. I always keep a supply on hand, and consider it a very necessary thing on any farm."

#### TAPLAN.

March 26th.—Present: eight members and visitors.

QUESTION BOX.—The meeting took the form of a "Question Box", when the following questions were discussed:—1. "Do you consider the present crop of self-sown wheat worth leaving for crops?" Members thought that that much depended on the weather, and also if the wheat was early or late. The general opinion

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expressed was that it would be too early to be of any great value. 2. "Which do you consider the best wheat pickling solution—bluestone or formalin?" Bluestone was the more favored of the two, but good results had been obtained from formalin. The main thing in either case was to do the work well. 3. "Do you consider it a payable proposition to crop new land on which small scrub has been cut during the last two or three months, if impossible to clear before?" Members generally agreed that when the land was cleared in time for seeding it was well worth cropping. One speaker had reaped an excellent crop off of a sandhill which was cleared during the early part of seeding. 4. "Do you favor the stripper or harvester for this district?" Farmers using the harvester were satisfied with those machines. Some of the members who worked strippers intended purchasing harvesters, chiefly on account of the very heavy losses sustained through rain while the crop was in the heaps.

WILKAWATT (Average annual rainfall, 16in. to 17in.).

April 16th.—Present: eight members and visitors.

LAMBS FOR FREEZING.—Mr. J. Lillecrapp, who read a short paper on this subject, held the opinion that early lambs under natural conditions were not profitable in South Australia. Lambs dropped in April and May nearly always received a check in their growth, because it was very seldom that early rains were received to bring on the green feed. When the heavy late rains fell in June the green feed made a luxuriant growth, and it was the rule rather than the exception to have the ewes as well as the lambs in tiptop market condition. For the freezing business, he favored a cross between the Dorset Horn ram and the large-framed mid-northern ewe. From experience he had proved that cross to be able to produce hardy, quick-growing lambs.

OATS AND PIGS.—In the course of a paper under the heading "Feeding Oats to Pigs versus Selling Oats in the Open Market," Mr. A. W. Bates said the present price for 100 bags of oats, including the sacks, was about £30. It would be found that with 100 bags of oats 18 pigs could be fed from the time they were weaned until they were 30 weeks old, and at that time they should be worth about £4 5s. per head, making a total of £76 10s. Provided one did not keep too many pigs, not a great deal of time was required in tending to their wants. He found that pigs fed in the sty three times a day did better than those given the same quantity of feed and allowed to run about in the paddock. Interesting discussions followed the reading of both papers.

COOMANDOOK, April 22nd.—Several matters, including the destruction of noxious weeds, the necessity for a port on the Murray, and the number of unoccupied blocks in the district were brought before the meeting for discussion.

BARMERA, April 22nd.—The meeting took the form of a "Question Box." A number of questions of interest to blockers were asked and answered. Matters relating to the forthcoming Conference of River Murray Branches were also discussed.

KI KI, March 18th.—Questions relating to the maintenance of roads, early and late varieties of wheat, and superphosphates, were brought before the meeting for discussion.

LAMEROO, February 19th.—Mr. G. S. Hayman read an article "Mammitis", and a long and interesting discussion followed.

MOOROOK, March 31st.—Mr. F. Murray-Jones, B.V. Sc. (Assistant Government Veterinary Surgeon) visited the Branch, and delivered a lecture, "Ailments of Horses."

MOOROOK, April 13th.—Seventeen members of the Branch and a number of visitors visited the Pyap Estate. The manager (Mr. G. Beverly) showed the visitors over the estate, and explained to them the latest methods adopted for the drying and the spray system of irrigation. Particular interest was taken in watching the evaporator at work. Members had the opportunity of seeing the fruit put through the different processes, the work being explained by Mr. Beverly. A light luncheon was provided for the visitors, and a hearty vote of thanks accorded Mr. Beverly.

**NETHEBTON**, April 23rd.—A lively discussion took place on questions relating to seeding operations. Members were of the opinion that the pickling was best performed by using a bluestone solution; 1lb. of bluestone to 10galls. of water, and thoroughly mixing the grain and pickle on a cement floor with a shovel.

**RENNMARK**, April 21st.—The meeting was devoted to a discussion on subjects for discussion at the forthcoming Conference of River Murray Branches to be held at Waikerie on May 30th and 31st and June 1st.

### SOUTH AND HILLS DISTRICT.

**CHERRY GARDENS** (Average annual rainfall, 35.03in.).

March 22nd.—Present: 12 members.

**EXHIBIT NIGHT.**—The meeting took the form of an "Annual Exhibit Night," when an excellent variety of produce was tabled:—Mr. C. Ricks, varieties of apples, also vegetables; Mr. Hy. Jacobs, apples, pears, and quinces; Mr. K. Jacobs, apples, potatoes, and onions; Mr. Hy. Strange, peas and tomatoes; Mr. C. Lewis, apples and pears; Messrs. J. L. and A. R. Stone, varieties of apples, pears, &c., potatoes and onions, also dried pears, plums, peaches, and figs.

**LENSWOOD AND FOREST RANGE** (Average annual rainfall, 35in. to 36in.).

March 19th.—Present: eight members and four visitors.

**ORCHARD INSPECTION.**—A most useful and interesting afternoon was spent inspecting Messrs. F. W. Green, B. J. Lawrence, and H. H. Schultz's orchards. Particular interest was shown in the different forms of spraying carried on at

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the orchards. At Mr. Green's property the trees had been treated with two sprayings of Bordeaux mixture, and the fruit was beautifully clean. In Mr. Lawrence's orchard, only one spraying had been given, and some of the fruit was spotted. At Mr. Schultz's garden the trees did not appear nearly so healthy as in the other two orchards. Lime sulphur and fungol were the preparations that had been used on the trees. An inspection of the plot where Departmental tests were being made regarding the regular cropping of apple trees was also undertaken.

LONGWOOD (Average annual rainfall, 37in. to 38in.).

March 19th.—Present: eight members and visitors.

ORCHARD INSPECTION.—The monthly meeting of the Branch was held at Mr. W. P. Woolcock's homestead. Members showed keen interest during the visit of inspection. The apple trees were loaded with good apples of uniform size, and it was expected that the trees would average five cases each. Emperor William and Canadian Wonder beans showed luxuriant growth. Some large Ponderosa tomatoes weighing 1lb. each were also favorably commented on.

MACGILLIVRAY (Average annual rainfall, 19in. to 20in.).

March 22nd.—Present: six members and visitors.

TREES ON THE FARM.—Mr. W. Cook, who read a paper dealing with this subject, said it was true to a certain extent that many of the trees on Kangaroo Island retarded the growth of grass and crops, yet for all that, there was a distinct advantage in the shelter they provided for the stock and homesteads, and also for the products that were obtained from the trees. The points he particularly wished to stress were:—The thoughtless destruction of the trees; the lack of enterprise on the part of settlers in not attempting to make their home surroundings beautiful by planting suitable timber; and the planting of a fruit and vegetable garden. The speaker said one too often noticed a homestead absolutely devoid of any trees. The settler on taking up his block did not place any value on the growing timber but rolled down and burnt every tree. That was a very short-sighted policy, for there was no doubt that unless shelter was provided for the stock, they would soon deteriorate in value and condition. He had seen the stock on wet and bleak days in the winter, and in scorching hot weather through the summer, standing out in the paddocks that had no shelter in them. Clumps of mallee should be left in the middle of large paddocks, and at intervals around the fences trees should be planted. The space left for the shelter should be about 50 yards square, so that a fairly large number of stock could find relief from unpleasant weather. The home should be situated in the centre of a large clump of timber, so that it would be protected on all sides from the wind, provision, of course, being made for a space of land for the garden. For planting in the fields, he suggested the following trees:—Sugar and red gums and Morton Bay fig. The carob, although it grew rather slowly, was a very valuable tree. It made a splendid shade for the stock, and produced a bean that was excellent fodder for stock. A plantation of pines would be a valuable asset, and also add to the appearance of the holding. For planting in the immediate vicinity of the homestead, he suggested pine trees, as they made a good breakwind. The scarlet-flowering gum grew very quickly, and in addition to being an ornamental tree, it provided a good area of shade; but the pepper tree, he thought, grew as well as any of the shade trees on the island. The speaker said he would like to see a few olive trees planted on every farm. They could be grown individually or as a hedge. There was a good demand for the olives, and the housewife could very often find a use for them as pickles. The farm garden should be placed in a sheltered position, and the land worked and treated like bare fallow. He suggested planting the following trees:—Apple, pear, plum, peach, quince, fig, and nectarine. If the farmer secured early, mid-season, and later varieties of trees he would be able to extend the fruiting season over a good portion of the year. The speaker then enumerated a number of suitable varieties for planting on the island. An interesting discussion followed, in which members agreed with the views of the writer.

**MEADOWS** (Average annual rainfall, 35.52in.).

March 23rd—Present: 14 members.

Mr. Griggs exhibited a vine runner which showed a growth of 16ft. for the season, but owing to the presence of odium the vine had not borne fruit during the year. Mr. Brooks advised spraying round the trunk of the vine with sulphur during the early part of the spring. He also considered that the lack of lime and excessive moisture helped the spread of the disease. The question was asked whether vines could be grown successfully in this district. Mr. Brooks and Mr. Nottage replied in the affirmative, but orchardists should be careful to plant the proper varieties. The Hon. Secretary (Mr. H. Michelmore) then read an article from the *Journal of Agriculture*. The following dates of forthcoming meetings were then decided upon:—May 18th, June 15th, July 20th, August 17th, and September 14th

**MOUNT BARKER** (Average annual rainfall, 30.93in.).

February 22nd.—Present: 46 members and seven visitors.

Mr. Temple-Smith (Tobacco Expert of the Victorian Department of Agriculture) visited the Branch and gave an address, illustrated with lantern views, "The Cultivation and Curing of Tobacco."

At a further meeting held on March 23rd an account of the Bureau exhibit which received first prize at the Adelaide Autumn Show was given by those responsible for the staging of the exhibit.

**BLACKWOOD**, April 18th.—Mr. A. K. Ashby delivered an address, "Lessons to be Learned from the Past Fruit Season." An interesting discussion followed.

**IRON BANK**, March 26th.—The monthly meeting of the Branch was held at the residence of Mr. J. Coats. Several items of local interest were brought before the meeting, and a discussion took place on the prospects of the fruit season.

**MENINGIE**, April 16th.—An interesting and instructive paper, "Agriculture in England," was read by Mr. F. G. Johnson.

**MORPHETT VALE**, March 24th.—The Hon. Secretary (Mr. A. J. Furniss) tabled samples of Sudan grass from 4ft. to 6ft. high, being the third cut for the season. Mr. Pocock tabled amber cane from seed sown since Christmas, about 5ft. high. Matters discussed included the pruning of vines, and ploughs with and without mouldboards.

**PORT ELLIOT**, March 19th.—The Hon. Secretary (Mr. H. B. Welch) read an extract from the *Journal of Agriculture*, and several items of local interest were brought before the meeting.

**URAILDA and SUMMERTOWN**, April 19th.—An interesting and profitable discussion took place on the subject, "Best Methods of Packing and Storing Apples." A programme of meetings for the period ending December, 1921, was also arranged.

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**SOUTH-EAST DISTRICT.**

**FRANCES**, February 26th.—An interesting discussion took place on the question "The Right Stage at which to Cut the Hay Crop." Matters in connection with the forthcoming Conference of South-Eastern Branches were also brought before the meeting.

**KALANGADOO**, March 12th.—Matters relating to the proposed Conference of South-Eastern Branches were brought before the meeting, and the delegates were appointed. Other items of local importance were also discussed.

**KEITH**, April 2nd.—Messrs. Stephens, Shannon, and Densley were nominated to attend the Short Course for farmers at the R.A.C. Other matters of local interest were brought before the Branch.



# CROWN LANDS.

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## LANDS TO BE OFFERED SHORTLY.

Pastoral lands east of Angepena, Mattawarrangala, Wilcowie, Mount Irwin, Warrataddy Box Flat, Mattawarrangala East, Warcowie—are gazetted open to application.

Allotments in towns of Cadell and Waikerie will be offered for sale on Irrigation Perpetual Lease by auction at the Land Office, Adelaide, on May 19th, 1921.

Full particulars are published in the *Government Gazette*, and plans are available on application to the Secretary for Lands, Adelaide.

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## APPLICATIONS FOR LAND.

Intending applicants for any lands which are open are reminded that application may be made for the whole or any portion of a block. The Land Board has power to allot portion of a block, if considered advisable, and to adjust the purchase-money or rent. If only portion of a block is applied for, deposit of a proportionate amount must be made, and the successful applicant would be required to pay cost of survey.

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## ALLOTMENTS, SALES, TRANSFERS, SUBLEASES, AND MORTGAGES.

Notice is hereby given that in future no applications for land, or for transfer, sublease, of mortgage of Crown leases or agreements will be approved to unnaturalised persons of any nationality, or to naturalised persons of enemy origin unless the consent of the Honorable the Attorney-General of the Commonwealth be first obtained by the parties making the application.

Where any doubt as to nationality exists, it will be necessary for certificate of birth or naturalisation papers to be exhibited.

The same principle will apply to land sold by auction.

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## OFFICIAL LIST OF LANDS OPEN.

The attention of intending applicants for land is directed to the Official List of Lands Open, which may be seen at the principal Post Offices, and copies obtained at the Office of the Secretary for Lands. The List shows the Areas, Localities, Prices, &c., of the Sections available and the conditions under which they may be applied for.

G. R. LAFFER,

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